

**SHEPPARD AIR FORCE BASE
QUALIFIED RECYCLING PROGRAM (QRP)
BUSINESS PLAN**



15 NOVEMBER 2006

82D CIVIL ENGINEER SQUADRON
82D MISSION SUPPORT GROUP

82D TRAINING WING
SHEPPARD AIR FORCE BASE, TEXAS



C155-2660
99173-07

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21 November 2006

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Subject: Draft Qualified Recycling Program Business Plan, Sheppard Air Force Base, Texas

Reference: Contract No. F41624-03-D-8617, Task Order: 0173, CDRL A007E

Dear Mr. Medina and Mr. Milhollon:

Please find attached one copy of the Draft Qualified Recycling Program (QRP) Business Plan for Sheppard Air Force Base. The QRP Business Plan outlines overall management of the recycling program at Sheppard AFB. The Business Plan uses a cost-benefit analysis to determine program profitability. A historical cost benefit analysis, an annual cost benefit projection, and a 3-year income projection was completed for this plan, all of which indicate that the QRP is providing a economic benefit for the base and HQ AETC.

If you have any questions or concerns regarding this matter, please feel free to contact me at (719) 685-6585 or by email at benjamin.recker@tetrattech.com.

Sincerely,

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1.0 INTRODUCTION

Sheppard Air Force Base (AFB) operates a Qualified Recycling Program (QRP) as a critical component of the installation's integrated solid waste management program. According to the Solid Waste Diversion Metric Reports (Sheppard AFB 2006) for Fiscal Year 2005 (FY05), Sheppard AFB was able to divert over 58,500 tons of waste from disposal facilities by implementing waste reduction and recycling operations. By diverting this solid waste, Sheppard AFB was able to avoid over \$6.6 million in collection and waste disposal costs. During FY05, the QRP generated over \$29,000 from the sale of recyclable commodities. In FY06, the proceeds from the sale of recyclables increased to \$64,000 and saved the installation over \$750,000 in landfill disposal costs. These diversion activities support mission accomplishment by reducing costs and protecting the environment.

2.0 PURPOSE

The purpose of this business plan is to serve as a guide for operating the Sheppard AFB QRP and to assist the program managers in making economical, efficient, and informed decisions. The business plan and corresponding database will assist the installation in maintaining a self-sustaining program by providing a financial management strategy and financial statements.

The financial statements are based on QRP guidance for determining profits and losses. Financial statements include historical cost benefit analysis, annual projected cost benefit analysis, and 3-year projected cost benefit analysis. The cost benefit analysis worksheets are modeled after standard accounting income statements and projection statements but take into consideration the unique methods of Air Force operations.

This business plan will discuss recycling center (RC) marketing plans and identify individual roles and responsibilities for RC and installation personnel and identify annual budgeting requirements associated with facility operations such as equipment, vehicle, and manpower requirements. The business plan will identify recyclable commodities that are collected, managed, and marketed by the RC and recommend methods for collection, processing, and packaging to receive the greatest revenues for the materials.

3.0 QRP MISSION

The mission of the Sheppard AFB QRP is to minimize the amount of waste discarded in landfills; increase the percentage of waste that is recycled; support Green Procurement policies; expand the education program with a focus on public awareness in support of recycling and composting programs; manage a self-sustaining recycling program; and comply with federal, state, local, Department of Defense (DoD), and Air Force regulations and policies.

4.0 QRP OPERATIONS

Department of Defense Instruction (DoDI) 4715.4, Pollution Prevention, defines QRP as the "organized operations that require concerted efforts to divert or recover scrap or waste, as well as efforts to identify, segregate, and maintain the integrity of the recyclable materials in order to maintain or enhance their marketability." The Sheppard AFB QRP comprises several activities, including operation of a Government-managed, contractor-operated RC; operation of a Universal Waste Recycling Center; Construction and Demolition Debris recycling; and composting at the Wichita Falls facility. Each of these operations is discussed in the following paragraphs.

4.1 RECYCLING CENTER OPERATIONS

The RC is operated out of Building 2140, located off Heritage Road, north of the Defense Reutilization and Marketing Office (DRMO) facility. Normal facility operating hours are 0700 to 1600 Monday through Friday. A 24-hour recycling drop-off center is available at the RC for customer convenience. The RC accepts cardboard, office paper, newspaper, aluminum cans, tin, scrap metal, plastics (Type 1 and 2), and brown and clear glass. In addition to the collection station, the RC contractor collects recyclables from installation facilities and Military Family Housing (MFH). The recyclables are brought to the RC, where they are separated and processed for sale to a vendor. Table 1 provides a summary of the types of materials that are accepted at the RC and how these materials are managed on Sheppard AFB.

Table 1
Management of Recyclable Materials

Recyclable Type	Management of Recyclables *All recyclables must be segregated*	Collection Locations	Concerns and Issues
Cardboard (OCC)	Broken-down boxes, brown wrapping paper, brown grocery bags, brown envelopes, shipboard (shoe boxes, cereal boxes, etc.).	MFH, Workplace, RC	Boxes MUST be broken down. Styrofoam and packing materials are not allowed.
Paper	Carbonless paper, fax paper, shredded paper, envelopes, brochures, junk mail, manila file folders, newspaper, magazines, phone books.	MFH, Workplace, RC	Glued and comb-bound reports are also recyclable, but plastic binding materials must be removed first.
Plastic	Bottles and other items may be mixed as long as they bear the numbers 1 or 2. Materials should be rinsed and the lids removed.	MFH, Workplace, RC	Items must have the numbers 1 or 2.
Aluminum cans	Aluminum cans.	MFH, Workplace, RC	Make sure cans are drained of liquid.
Glass	Glass beverage bottles and (rinsed) food containers only. No drinking cups made of glass.	MFH, RC	Broken glass is not accepted for recycling.
Steel (tin) cans	Clean rinsing of steel cans is not required, but is recommended to reduce potential odors and pests.	MFH, RC	No aerosol cans or propane tanks.
Scrap Metal	Includes large pieces of scrap aluminum, steel, tin, copper, and other metals. Items containing metal which can be disassembled, piping, wiring, and unusable items.	MFH, RC	

Figure 1 illustrates the percentage of each commodity processed at the RC, based on weight. Based on FY05 and FY06 data, cardboard—or OCC—is the predominantly processed recyclable at the RC, comprising 54 percent of the material processed. Scrap metal comprised 23 percent, followed by paper, which comprised 16 percent of the materials processed.

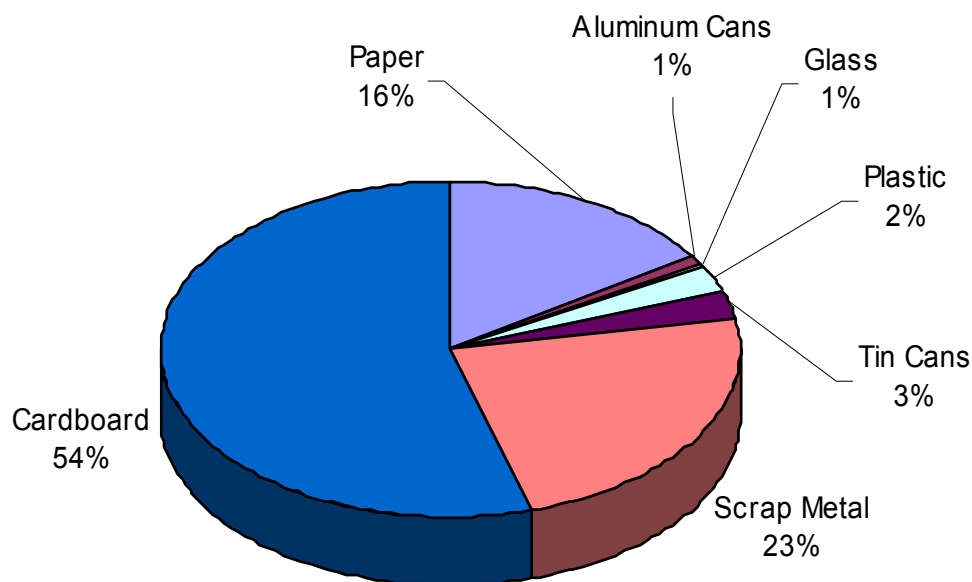
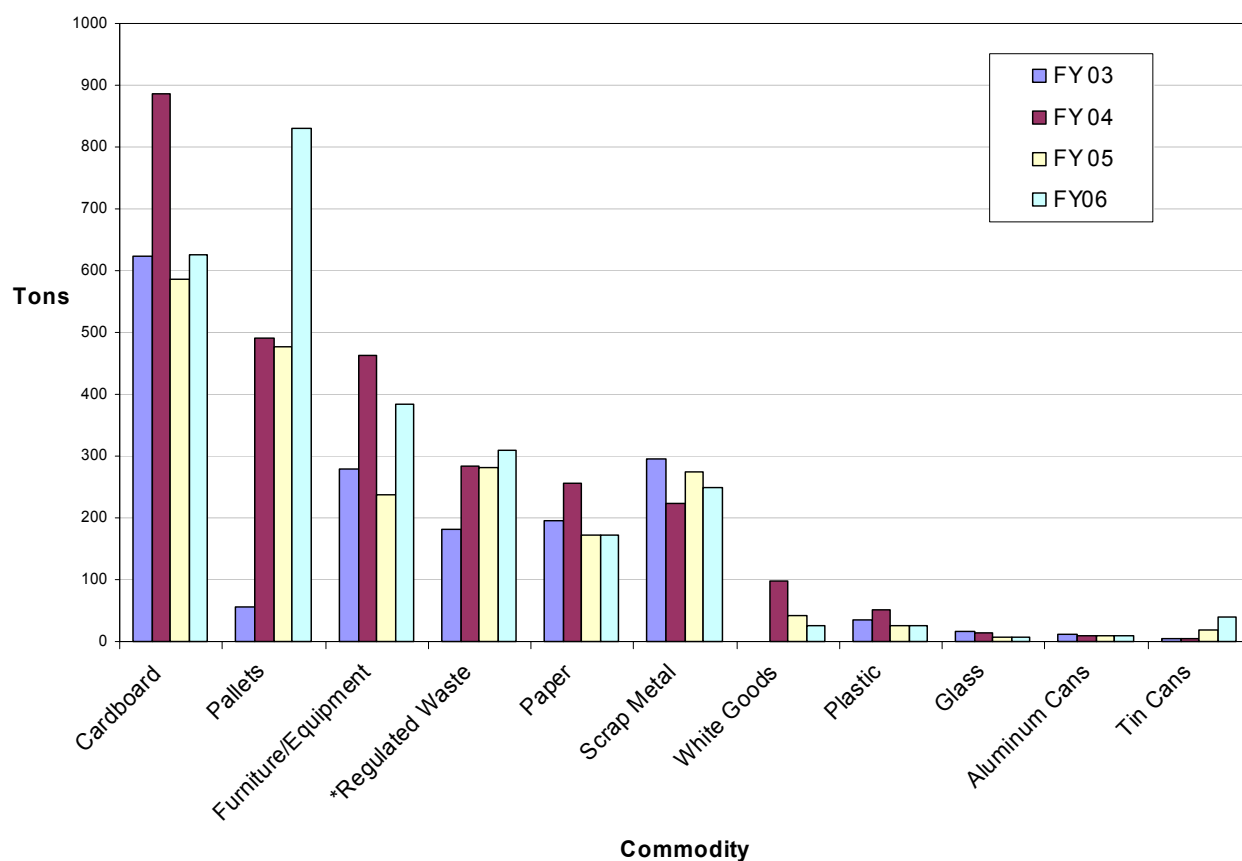


Figure 1
FY05 and FY06 Recyclable Materials Processed

A review of RC data from FY03 through FY06 indicates the center processed approximately the same percentage of material each year. Figure 2 depicts tons of each commodity processed from FY03 through FY06. While recycling opportunities can vary based on numerous variables, an overall increase in the quantity of recyclables processed over time is desirable. An increasing trend would indicate more participation, while a decreasing trend would indicate the need to promote or improve education and outreach activities.

According to a United States, Environmental Protection Agency (U.S. EPA) study conducted in 2003, 35 percent of the municipal solid waste generated consists of paper and paperboard products, including cardboard (U.S. EPA 2003). In FY06, Sheppard AFB generated 9,279 tons of solid waste (Sheppard AFB 2006). Using the EPA estimate, paper and paperboard products made up 35 percent of the total solid waste generated. This means that approximately 3,250 tons of paper, paperboard and cardboard products were generated by Sheppard AFB in FY06, of which only 797 tons were recycled by the RC. Therefore, the RC is capturing 24.5 percent of the paper and paperboard waste being generated. Based on this analysis and looking at the trends in Figure 2, Sheppard AFB could focus awareness and education efforts to increase the amount of paper and cardboard products being recycled. Similarly, scrap metal (including aluminum) comprises approximately 8 percent of the solid waste generated (U.S. EPA 2003). Based on this assumption, 742 tons of metal waste are generated and the RC is capturing 297 tons—a 40 percent recovery rate. Based on the EPA study, Sheppard AFB's recovery rates for glass, plastic, and food are 1.3 percent, 2.5 percent, and about 91 percent, respectively.



Note: Regulated Waste includes degreasers, fluorescent lamps, batteries, paint, used oil, used oil filters, tires, antifreeze, solvents, and electronic media.

Figure 2
Historical Recycling Processing Data

4.1.1 Collection Schedule

Recyclables are collected from MFH units Monday and Friday depending on the housing area. Recyclables are collected from the remainder of the installation in accordance with Contract Number FA3020-06-C-0001. A copy of the current collection schedule is located in Appendix A. Changes to the collection schedule occur if the recycling pickups are excessive or too infrequent. Personnel who require additional pickups due to special circumstances—e.g., unit functions, clearing out of files, moving—must contact the RC to schedule a pickup and/or arrange for additional containers. MFH residents who are moving in or out because of permanent change of station (PCS) can call to schedule cardboard pickups. Additional collections can be arranged by contacting the RC.

4.1.2 Recycling Facility

The recycling facility is located in Building 2140, adjacent to the DRMO building. The facility is approximately 10,000 square feet in size. The facility serves as an office for 7 personnel; a 24-hour recyclable drop-off center; and a processing, packaging, and transport center. The entire storage yard, including the building, is fenced and gated to control entry and ensure safekeeping of commodities and equipment. Figure 3 depicts the facility layout.

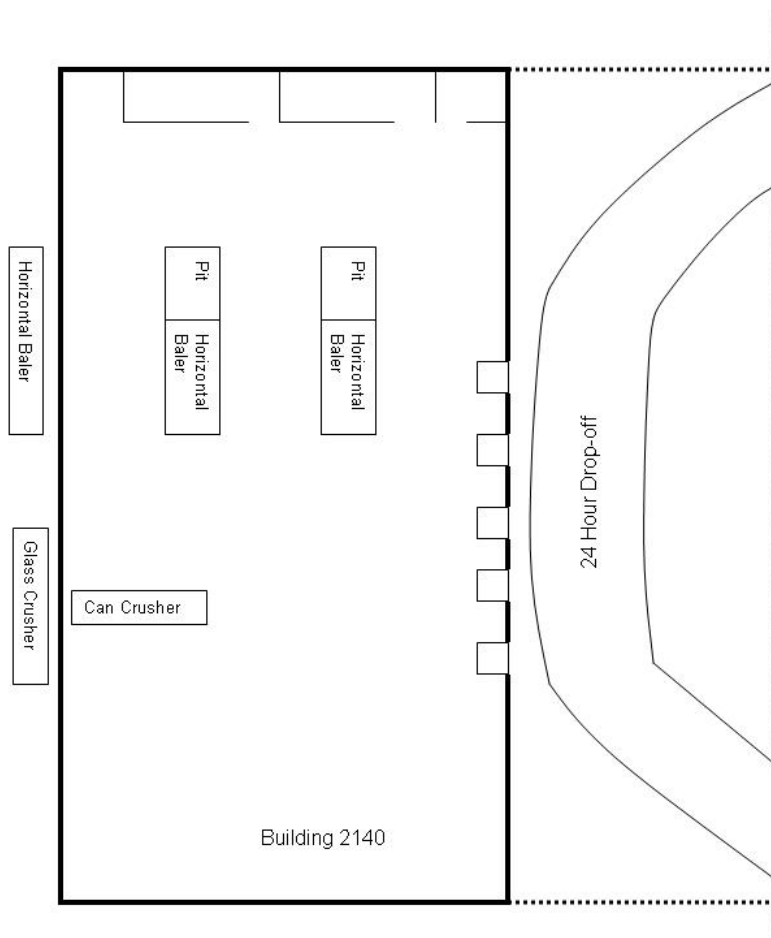


Figure 3
Recycling Center Diagram

4.2 REGULATED WASTE RECYCLING

Regulated wastes are specific wastes that require special handling and/or disposal. Regulated wastes include Hazardous Waste, Universal Waste, and others defined by federal, state or local regulations. For more information concerning regulated waste management see the Sheppard AFB Hazardous Waste Management Plan and the Sheppard AFB Integrated Solid Waste Management Plan. When technically and economically feasible, Sheppard AFB diverts these wastes from disposal by reusing or recycling. In FY05, Sheppard AFB was able to divert 319 tons of regulated waste from disposal. Figure 4 illustrates the percentage of regulated waste processed at Sheppard AFB.

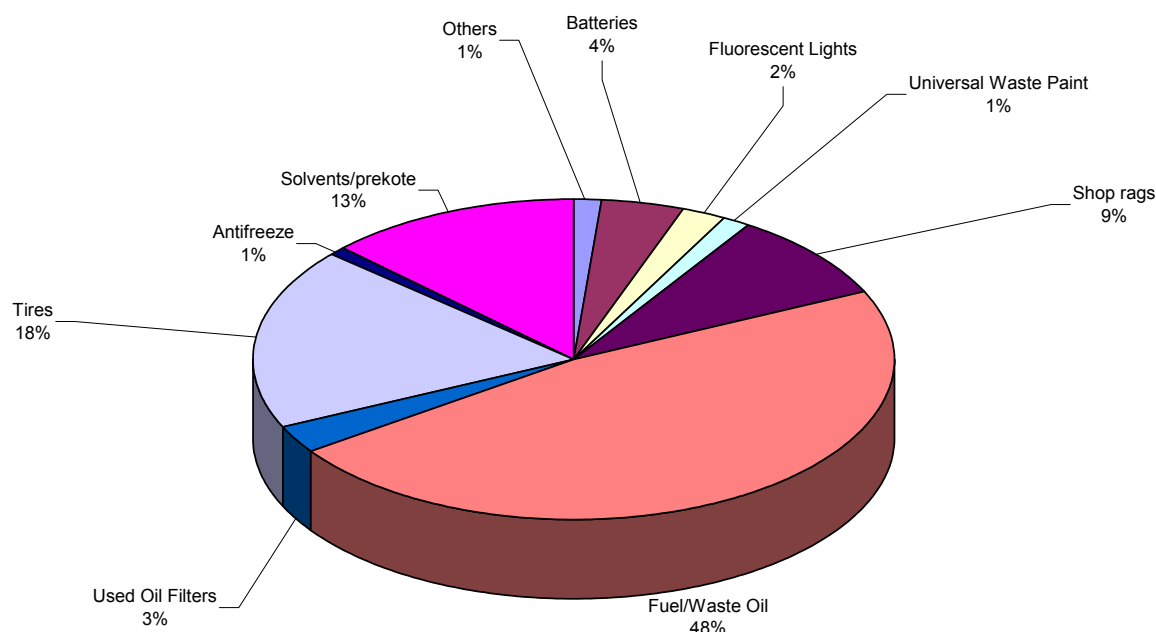


Figure 4
FY05 and FY06 Regulated Waste Processed

4.2.1 Universal Waste Recycling Center Operations

The Universal Waste Recycling Center (UWRC) is also operated out of Building 2140. The UWRC accepts aerosol cans; lead-acid batteries; electronic media such as DVDs, CDs, and VHS tapes; fluorescent lamps; paint; and red rags for recycling. Normal facility operating hours are 0830 to 1430, Tuesday through Thursday. Appointments can also be made by calling 6-4600/5721.

4.2.2 Other Regulated Waste Recycling Methods

Sheppard AFB has recycling processes established for diverting regulated waste.

- Antifreeze is recycled at Base Vehicle Maintenance (82 LRS/LGRTV), Auto Skills Center (Building 55), and the South Army and Air Force Exchange Service (AAFES) Shoppette. An antifreeze recycling unit is used to recycle used antifreeze on-site. Antifreeze processed through the recycling unit must then be processed using an antifreeze recycling kit prior to reuse. Each recycling kit costs about \$100 and recycles approximately 55 gallons of antifreeze. This operation avoids disposal fees and fees associated with purchasing virgin antifreeze.
- Oil filters from “do-it-yourself” projects should be brought to the Auto Skills Center, Building 55. The used oil filters are collected from various locations on the installation by Purser Oil Services for recycling. Other generators of oil filters should contact the Environmental Management Flight (82 CEV/CEVP), 6-2415, to determine management practices.

- Used oil generated on the installation is accumulated at the point of generation and collected by Purser Oil Services for reuse or recycling.
- Tires from Government-owned vehicles should be taken to the DRMO. The DRMO recycles these tires through a recycling contract. Base residents can take their used tires to the AAFES Gas Station for recycling. There is a nominal fee for residents to recycle their tires through AAFES.
- Reusable solvents from industrial and commercial facilities can be taken to the Hazardous Materials Pharmacy (HAZMART), Building 2116, for reuse. Contact 82 CES/CEVP at 6-2415 for management of unusable solvents. Sheppard AFB also has two solvent distillation units that can process used solvents for reuse. Three parts of the distilled solvent is mixed with one part virgin solvent to meet user requirements. This process not only saves money in solvent disposal costs, it also saves money by allowing Sheppard AFB to purchase 75 percent less virgin solvent. Sheppard AFB is replacing one of its distillation units.
- Sheppard AFB operates an electro-coagulation unit that processes wastewater from aircraft painting operations. Prekote replaced alodine in the surface preparation phase of painting operations. While Prekote is a much safer alternative to alodine, the wastewater from the surface preparation operations can still be regulated due to high levels of heavy metals, especially chromium. The electro-coagulation unit processes the wastewater from painting operations, rendering it non-hazardous. Following the electro-coagulation process, the wastewater is disposed of in the sanitary sewer. This activity meets the Texas definition of waste minimization.

4.3 CONSTRUCTION AND DEMOLITION DEBRIS RECYCLING

Construction and demolition (C&D) debris is defined in Texas Administrative Code (TAC) Title 30 §330.2.(28) as “waste resulting from construction or demolition projects; includes all materials that are directly or indirectly the by-products of construction work or that result from demolition of buildings and other structures, including, but not limited to, paper, cartons, gypsum board, wood, excelsior, rubber, and plastics.” The C&D debris is generated by various activities including military construction (MILCON), pavements, Indefinite Delivery/Indefinite Quantity (ID/IQ), minor construction, Simplified Acquisition of Base Engineer Resources (SABER), in-house work orders, and housing maintenance activities. Horizontal Construction (82 CES/CEOHH) operates a C&D debris storage yard near the DRMO facility. This storage facility collects asphalt, concrete, and inert fill material from in-house work and other small construction activities from around the installation. Periodically, the 82 CES/CEOHH contracts for the removal of the accumulated debris, which should be reused or recycled to the maximum extent feasible.

For larger C&D projects, recycling requirements are included in the contract provisions. For example, in FY05, a large airfield ramp/apron pavement replacement project was accomplished. The concrete debris that was removed during this project was recycled by the construction contractor. Sheppard AFB did receive credit for this diversion in addition to avoiding disposal costs. In FY05, the C&D debris operations resulted in over 55,550 tons of waste being diverted. This activity alone avoided \$6 million in contract collection and disposal costs (Sheppard AFB 2006).

4.4 COMPOSTING OPERATIONS

Sheppard AFB participates in a regional composting program with the City of Wichita Falls. Green (yard) waste is generated by the grounds maintenance contractor and base housing residents. Green waste generated by the grounds maintenance contractor is transported to the City of Wichita Falls landfill for eventual composting. MFH residents place their green waste in bio bags, which are collected by the recycling contractor for transport to the City of Wichita Falls composting facility. Christmas trees are also collected and transported to the compost facility. Sheppard AFB collects and composts unusable pallets at the city facility. In FY05, Sheppard AFB diverted 315 tons of material to the City of Wichita Falls compost facility (Sheppard AFB 2006). The city charges a compost fee of \$19.80 per ton compared to \$30.80 per ton for disposal in the landfill. The disposal fee does not include collection and transportation fees.

Sheppard AFB also collects organic (food) waste from the dining facilities on the installation. The food waste is collected by the refuse contractor and transported to the compost facility.

5.0 MARKETING STRATEGIES

Receiving maximum market prices for the sales of recyclable commodities is the goal of any recycling program. By receiving the maximum sales price, the installation will increase their profit margin. To receive maximum sales prices, the QRP/RC manager must watch the recyclable market and establish sales procedures.

5.1 MARKET AND ECONOMIC ANALYSIS REQUIREMENTS

As required by the Air Force Solid Waste Diversion and QRP Policy, installation recycling managers must conduct periodic market and economic research analysis to identify the best price for materials sold through the QRP and to determine if the lists of recyclables accepted result in an economic benefit to the government. At a minimum, this analysis must be completed and documented annually.

The market analysis evaluates potential recyclable vendors, both local and elsewhere, to determine if the installation can obtain a better return for their recyclable commodities. The sales price of the commodity is an important factor that must be evaluated, but the market analysis must include other considerations (such as minimum weight) accepted by the vendor (some vendors require 40,000 pounds per shipment), processing requirements (baled or loose), and quality requirements (amount of contaminants allowed by the vendor). Based on the information collected from the vendors, the installation must select the vendor that most closely meets the installation's needs. Appendix B has a sample data collection sheet that can be used to conduct and document the required market analysis.

An example of a program demonstrating that the highest sales price does not always yield the highest return is the Sheppard AFB used oil program. Currently, Sheppard AFB contracts with Purser Oil Service to collect and recycle used oil from various collection locations on the installation. Sheppard AFB pays approximately \$0.10 per gallon for this service. Other used oil vendors, such as US Filter or Approved Oil, will pay the installation for the used oil. Looking strictly at the cost, going with another vendor appears advantageous, but other vendors will not collect from the various collection areas around the installation. Sheppard AFB would have to establish a central collection center to receive a better price. The additional risk and cost associated with transferring the used oil to a central collection location is not operationally feasible for Sheppard AFB, so Purser Oil Service provides the better return.

Market analysis should be used to determine new or emerging recycling commodities. As new markets become available, the installation must perform an economic analysis to determine if it is economically feasible to begin recycling a new commodity. To complete this analysis, the installation must determine its estimated generation rate of the recyclable material, processing or packaging requirements, new equipment purchases required, probable sales price, and costs associated with collecting the new material. Using this information, the installation can perform a cost benefit analysis to determine if recycling the commodity is worthwhile. The Equipment Purchase Flow Chart and Worksheet discussed in Section 6.1.5 (and shown in Appendix B) will help support this economic analysis.

In addition to the recyclable commodity analysis, the QRP manager (QRPM) is required to perform periodic economic analysis concerning QRP operations. This analysis compares alternatives such as the QRP being Government-operated using civil service employees, contractor-operated using strictly contract employees, or contractor-operated using off-site facilities. The last analysis completed by Sheppard AFB in 2004 resulted in recycling operations being converted to Government-managed, contractor-operated. A copy of this analysis is included in Appendix C and can be used as a baseline for conducting future QRP operations analysis.

5.2 RECYCLABLE SALES

Sheppard AFB markets, processes, and sells its recyclable materials to numerous local material handlers, including IESI Corporation, Evergreen Recycling, Ray's Scrap Metal, and USI International. These material handlers package and market the material to recycling processing facilities or mills. By using local vendors, transportation costs are minimized. The RC manager and/or the QRPM must monitor the recyclable market to take advantage of higher sales prices and discourage the sale of recyclables when market prices are lower than normal.

There are several recycled material mills within Texas and Oklahoma that purchase processed commodities directly from recycling centers. Typically, a better sales price is obtained for direct-to-mill sales, but the increased cost of transportation to these facilities may actually negate the higher sales price. For example, Vista Fibers was contacted to determine the sales price for paper shipments from Sheppard AFB. Vista Fibers indicated that the sales price for shredded paper would be \$60 per ton after transportation costs. This sales price is less than the average sales price Sheppard AFB is currently receiving from the local material handler so the sale is not economically beneficial in this case. Direct-to-mill sales are not always possible, since single commodities must make up the entire load (which requires approximately 40,000 pounds). The QRP and RC manager should consider direct-to-mill sales if it becomes more economically advantageous.

A better sales price can be achieved by packaging materials in a manner that will generate a better sales price. Materials that are segregated and baled are typically worth more to a vendor than materials that are commingled and loose. Baled, mixed loads of recyclables will generate larger profits than shipments of materials sold loose in gaylords. The lower market price for loose commodities is due to the additional processing required before the material handler can send the materials to the processing mill. Currently, Sheppard AFB segregates and bales paper, cardboard, and plastic and compacts and binds aluminum and tin cans to maximize their sales price.

As previously discussed, Sheppard AFB has several local vendors that purchase recyclable commodities. These vendors should be evaluated to determine the best sales price for each shipment. Vendor evaluation consists of identifying the best sales price for the services provided (collection/transport of the materials) and timely receipt of payments. Table 2 illustrates the per-unit price received for each recyclable commodity averaged over FY05 and FY06 and 4th quarter-average sales prices. The current sales price for paper, cardboard, aluminum cans, and newspaper is well above the 2-year average price. Prices for plastic and scrap metal are well below the 2-year average price, which may indicate a slowdown in market demand. Sheppard AFB should avoid selling these commodities until the sales price increases back to the 2-year average price.

Table 2
FY05 and FY06 Revenues

Commodity	Tons Sold	Average Sales Price from FY05–FY06 (per ton)	4th Quarter FY06 Average Sales Price (per ton)
Paper Mixed/Shredded	98.91/82.52	\$29.82/61.89	\$35.00/85.00
Cardboard (OCC)	646.03	\$78.43	\$100.09
Tin Cans	36	\$20.00	\$20.00
Aluminum Cans	13.53	\$608.05	\$850.90
Newspaper	19.05	\$52.90	\$60.00
Glass	8.15	\$0.00	\$0.00
Plastic	22.53	\$89.26	\$45.80
Scrap Metal	7.10	\$37.16	\$22.79

5.3 DEFENSE REUTILIZATION AND MARKETING SERVICE SALES

DRMO accepts, processes, and sells recyclable commodities through established mechanisms. At Sheppard AFB, the DRMO collects, processes, and markets excess Government furnishings, Government-purchased appliances, used computers, and certain scrap metals. For more information concerning materials accepted by DRMO, please refer to the Sheppard AFB Integrated Solid Waste Management (ISWM) Plan.

In accordance with DoDI 4715.4, Pollution Prevention, 100 percent of any proceeds DRMO receives (less the costs of sales and handling) from the sale of eligible recyclable commodities is required to be returned to the installation. The proceeds DRMO receives for materials from non-QRP eligible items are returned to the U.S. Treasury. Appendix D contains the list of eligible and non-eligible items. To ensure proceeds from DRMO recyclable sales are returned to the installation, the QRP Budget Clearing Account number must be added to Block 27 of DD Form 1348-1A, Issue Release/Receipt Document. The installation QRPM should obtain and maintain copies of DD Form 1348-1As associated with eligible recyclable commodities processed through DRMO.

5.4 OUTREACH AND AWARENESS PROGRAMS

Sheppard AFB has implemented a recycling outreach program to promote recycling efforts, increase the amount of commodities collected, increase recycling proceeds, and reduce solid waste disposal costs. The program focuses on solid waste generators, including MFH and dormitory residents, military and contractor organizations, and tenants. The purpose of a comprehensive recycling outreach program is to continually provide education and awareness to a very diverse and transient audience while maintaining a high level of participation in recycling programs on Sheppard AFB. The following summarizes each outreach method used to educate personnel and promote recycling and pollution prevention throughout Sheppard AFB.

5.4.1 General Base Awareness

Developing an effective education program requires an understanding of the different groups generating wastes on Sheppard AFB. Recycling monitors are appointed for each base organization and are the primary source for disseminating information about the recycling program. Different strategies are effective for different groups (such as MFH, schools, industrial operations, commercial operations, and contractors). Different methods of publicity are used, including fact sheets (emailed and posted), magnets or flyers targeted at MFH residents, newspaper articles, newsletters, calendars, and media events such as America Recycles Day and Earth Day. Examples of topics for flyers include cardboard recycling, office recycling, RC acceptables/unacceptables, recycling pickup schedule, white paper recycling, and directions to the locations of the proper recycling containers.

In addition to flyers, outreach materials in the form of Recycling Guides have been developed to focus on targeted audiences such as MFH and dorm residents. The Family Housing Guide contains information regarding curbside recycling, when to place recycling containers outside for pickup, cost-benefits of recycling, acceptable recyclables that can be picked up, recyclable items that can be dropped off at the RC, and special drop-off locations for household hazardous chemicals, furnishings, and automotive fluids. Similar to the Family Housing Guide, the Dorm Recycling Guide contains information about the benefits of recycling, location of recycling containers, and what items can be recycled.

In addition to Recycling Guides, Sheppard AFB has developed a dynamic and comprehensive environmental intranet site to provide installation personnel with a user-friendly and informative environmental resource. The content of this site includes environmental policies, procedures, forms, links, and documents. This site is updated monthly and includes all outreach media developed for the recycling outreach program. Fact sheets and newspaper articles are also generated throughout the year and distributed to the base populace. Copies of this information are loaded onto the intranet site. Other outreach materials (such as magnets, door hangers, and container decals) are generated periodically as simple reminders about the importance of recycling.

Sheppard AFB currently conducts surveys of industrial areas to assess the condition of recycling containers. These surveys should be expanded to include a monthly recycling participation audit for military- and contractor-operated facilities to determine recycling participation rates. Wherever low participation rates are found, facility training, quarterly electronic newsletters, and e-mail reminders about improving recycling efforts should be implemented. Public display boards and posters can also be developed to re-educate base personnel and increase participation rates.

5.4.2 Special Events and School Outreach

Throughout the year, Sheppard AFB promotes recycling and other environmental programs at special events. The following paragraphs describe some of these events.

Earth Day. During the month of April, 82 CES/CEV displays its various environmental programs during a day-long event at the River Bend Nature Works. This event provides the base with an opportunity to educate and promote environmental compliance in every functional area (Pollution Prevention, Solid Waste, Water Quality, Hazardous Materials, Hazardous Waste, Installation Restoration Program, Conservation, Natural Resources, and Cultural Resources). Regulatory agencies, contractors, and local businesses are also invited to attend the event and display environmentally friendly products and services.

America Recycles Day. During the month of November, 82 CES/CEV showcases its base-wide recycling efforts by hosting an America Recycles Day event, which consists of handing out fact sheets, newsletters, and other educational materials.

Clean Texas, Cleaner World. To demonstrate Sheppard AFB as a model citizen within the Wichita Falls community and the state of Texas, Sheppard AFB participates in the Clean Texas program. Clean Texas, Cleaner World is a voluntary environmental leadership program to protect air, water, and land resources in Texas. Key components of the program are recognizing organizations for creative approaches to resolving environmental challenges and setting goals that exceed compliance levels under existing regulations; promoting public awareness and participation in activities that protect air, water, or land resources; encouraging organizations to implement sustainable practices; and reporting measurable environmental results.

Wichita Falls Clean County. Sheppard AFB participates in Keep America Beautiful (Wichita Falls Clean County Affiliate) to maintain a positive relationship with the local community. The Wichita Falls Clean County affiliate participates in the Great American Cleanup from 1 March through 31 May, where various state and local affiliations of Keep America Beautiful volunteer within their community to provide an environment that is healthy, safe, clean, and beautiful. Community awareness and volunteer programs include recycling awareness, solid waste management, litter control, and beautification project (i.e., tree planting, landscaping).

Sheppard AFB Environmental, Safety and Occupational Health Day. In 2006, Sheppard AFB converted the base's annual stand-down "Safety Day" into "ESOH Day." This event is dedicated to promoting environmental, safety, and occupational health, while accomplishing Sheppard AFB's mission. The day consisted of comprehensive ESOH training, as well as community events, to raise awareness of ESOH programs on Sheppard AFB. On-base and off-base organizations set up booths, displays, and presentations to promote their programs. Sheppard AFB environmental personnel staffed a booth that provided information on the recycling program.

Sheppard AFB places a special emphasis on providing recycling outreach to its on-base school. The focus of this outreach is to instruct students and teachers on the importance of recycling. Through this effort, Sheppard AFB hopes students may in turn instruct and promote recycling in their daily activities.

6.0 FINANCIAL MANAGEMENT

Financial records are used to show past, current, and projected finances. Financial data from FY05 to present are available in the QRP database. The database assists the QRP, solid waste, and facility operations (FO) program managers with annual budgeting requirements, determining equipment needs, and projecting income from future operations. The database produces several financial reports, including a historical cost benefit analysis, annual actual and projected cost benefit analysis, and a 3-year projected cost benefit analysis. The database also assists with planning for equipment replacements—identifying how much money should be saved each year to plan for equipment purchases. An equipment purchase worksheet is included in the database to assist RC managers in determining whether they should buy new equipment.

6.1 ANNUAL OPERATIONAL COSTS

Annual operational costs are the funds needed to operate the QRP for a given year; they reflect priorities on how funds are allocated. These include costs for equipment such as recycling containers; horizontal/vertical balers and crushers/condensers; vehicles; supplies; advertising or outreach; utilities; and manpower. To cover operational costs, funds can be obtained through various sources such as Pollution Prevention (P2), Operations and Maintenance (O&M), MFH, Wing funding (Commanders Account), and the QRP account.

6.1.1 Recycling Center Operating Costs

RC operations are conducted under Contract Number FA3020-06-C-0001. This service contract covers personnel required to perform recycling collection and processing activities, as well as contractor vehicle operations costs. The current contract includes activities for FY06 as well as four option years. Under the existing contract, the maximum annual contract cost for RC operations is \$277,536. Contractor-provided vehicle operations and maintenance is paid on a reimbursable basis not to exceed \$18,000; therefore, the total operating cost for the contractor-run RC is \$295,536.

6.1.2 Universal Waste Recycling Center Operating Costs

The UWRC is operated by one General Schedule (GS)-07 Government employee with development and promotion potential to GS-09. The UWRC is operated Tuesday through Thursday 0830 to 1430, or a total of 936 hours per year. The DoD GS locality pay scale for Wichita Falls, Texas, for calendar year (CY) 2006 was used to determine the minimum and maximum manpower cost. Table 3 shows the hourly rate for one GS-07 Step 1 position and the cost at the maximum step for this grade.

Table 3
2006 Annual Manpower Cost

Position	Grade Level	Number of Employees	Hourly Minimum Salary (Step 1)	Minimum Cost Based on 936 hours per year	Hourly Maximum Salary (Maximum Step)	Maximum Cost Based on 936 hours per year
UWRC Manager	GS-07	1	\$16.83	\$15,752.88	\$21.87	\$20,470.32

The minimum cost for manpower is \$15,752.88 per year, and the maximum cost is \$20,470.32 per year. Salaries exclude benefits paid by the Government and annual cost of living increases. If Government benefits are included in the calculation, salaries for the UWRC employee will increase.

Sheppard AFB diverts regulated waste from disposal as described in Section 4.2. Table 4 summarizes the average annual weight of regulated waste recycled and the cost associated with these diversion activities.

Table 4
2006 Average Annual Regulated Waste Recycled and Associated Cost Benefit

Commodity	Recycling Unit Cost	Average Annual Amount Processed	Average Annual Recycling Cost	Disposal Unit Cost	Average Annual Cost Avoided	Annual Gross Benefit
Antifreeze	\$1.82/gal	703 gal	\$1,279.46	\$5.39/gal	\$3,789.17	\$2,509.71
Used Oil/Fuel	\$0.10/gal	32,486 gal	\$3,248.60	\$0.25/gal	\$8,121.50	\$4,872.90
Oil Filters	\$50/barrel	36 barrels	\$1,800.00	\$138/barrel	\$4,968.00	\$3,168.00
Tires	\$0.00/lb	97,770 lbs	\$0.00	\$0.23/lb	\$22,487.10	\$22,487.10
Batteries						
Lead Acid	\$0.00/lb	33,250 lbs	\$0.00	\$0.65/lb	\$21,612.50	\$21,612.50
NiCad	\$0.95/lb	839.5 lbs	\$797.53	\$0.95/lb	\$797.53	No Savings
Mercury	\$5.00/lb	8.5 lbs	\$42.50	\$5.00/lb	\$42.50	No Savings
Lithium	\$2.50/lb	148 lbs	\$370.00	\$2.50/lb	\$370.00	No Savings
Solvent	\$0.00/lb	6878 lbs	\$0.00	\$0.45/lb	\$3,095.10	\$3,095.10
Prekote	\$0.00/lb	104,244 lbs	\$0.00	\$0.45/lb	\$46,909.80	\$46,909.80
Red Rag Program	\$0.97/lb	115,116 lbs	\$111,662.52	\$1.12/pound	\$128,929.92	\$17,267.40
Fluorescent Lamps	\$0.33/lb	16,000 lbs	\$5,228.24	\$1.00/lb	\$16,000	\$10,720.00
				Total Gross Benefit		\$132,694.29
				Less Manpower		\$20,470.32
				Total Net Benefit		\$112,233.95

6.1.3 Construction and Demolition Debris Recycling Costs

The type of debris associated with C&D recycling consists of mostly concrete and asphalt. For large construction projects, recycling requirements are included in the contract costs. For smaller, in-house projects, concrete and asphalt are collected at the storage facility. Periodically, 82 CES/CEOHH hires a contractor to remove and recycle the accumulated debris. In June 2006, an \$18,000 lump sum contract was signed to remove debris consisting primarily of concrete and asphalt accumulated during FY06. Under the terms of the contract, the contractor was not required to provide weight tickets or final disposal location. This practice should be changed in the future to require the removal contractor to provide weight tickets and ultimate disposal location for documentation purposes.

Historical data for this type of operation on Sheppard AFB indicates an approximate cost of \$5.25 per ton. The inert material has been previously used to reclaim a quarry or as erosion control at the local landfill. Sheppard AFB should track future C&D debris recycling costs and update this business plan appropriately. This business plan assumed that the \$18,000 removal cost for this year is representative of the annual cost for the 82 CES/CEOHH recycling efforts.

6.1.4 Composting Operating Costs

Sheppard AFB transfers yard and wood waste to the City of Wichita Falls composting facility. MFH residents place their yard waste in the bio bags for collection. The RC contractor collects the bags on Wednesdays and places them in a designated roll-off dumpster. The roll-off dumpster is located at the RC and is rented for \$60 per month. When full, the dumpster is removed and replaced with an empty dumpster. The empty and return operation costs \$115 per trip plus fuel surcharges. Typically, this roll-off is emptied three times per month. The compost facility charges \$19.80 per ton tipping fee. The average per-ton cost for the compost operation is \$79.22. Through this operation, MFH composts an average of 80 tons of material per year for an annual program cost of \$6,337.60.

The grounds maintenance contractor and refuse collection and disposal contractor also play an integral role in composting operations. The grounds maintenance contractor collects green waste, such as tree trimmings and yard debris, from their operations and transports the material to the Wichita Falls Compost Facility. The cost of this operation is included in the grounds maintenance activities so there is not an additional cost to the installation for the composting operations. In FY06, the Sheppard AFB refuse collection and disposal contractor began collecting food waste from the dining facilities and transporting the material to the Wichita Falls Compost Facility. During the initial stages of this new initiative, only 6 tons of food waste was collected per month; however, a proactive educational program resulted in an increase to 20 tons per month by the end of FY06. In FY06, Sheppard AFB paid \$41,388 for collection and transportation of the food waste to the compost facility. Sheppard also paid \$18.00 per ton to compost the food waste. This program resulted in 185.17 tons of food waste being diverted at a total FY06 cost of \$44,721, which saved the installation \$1,851.70 in landfill disposal fees (Sykes 2006). Sheppard AFB anticipates the amount of food waste collected and composted to continue to increase in FY07 and beyond. It is estimated that Sheppard AFB will continue to divert 20 tons per month at a minimum, which would result in an annual diversion rate of 240 tons and a cost \$45,708.

6.1.5 Equipment Costs

Equipment necessary to run the QRP includes balers, crushers, shredders, sorters, conveyors, material handling equipment (such as forklifts), recycling bins, trucks, and trailers. The RC provides containers for their central collection areas, but facility managers are required to purchase desk-side containers for personnel.

6.1.5.1 Government-Owned Equipment

The Government owns various pieces of equipment, as listed in Table 5, to support QRP operations and is responsible for the costs associated with maintaining this equipment. Most of the Government-owned equipment was purchased and placed in service in January 2005, when QRP operations changed to a Government-managed, contractor-operated program. Since CY05, this equipment has not required any significant maintenance. It is estimated that \$1,000 per year will be needed to maintain this equipment (Milhollon 2006).

Table 5
Government-Owned Equipment

Item	Purpose	Quantity
Shrink Wrap Machine (UWRC)	Packaging	1
Paper Shredder (UWRC)	Paper Shredding	1
Trailer, Tilt	RC Collections	7
Trailer, Utility 16 ft. (White)	RC Collections	1
Trailer, Utility 16 ft. (Green)	RC Collections	1
Trailer, Utility 18 ft. (Charcoal)	RC Collections	1
Can Crusher	Aluminum and Tin	1
Glass Pulverizer	Glass	1
Recycling Trailer	RC Collections	2
Trailer, Car Hauler, 16 ft. (Blue)	Storage/Transport	1
Baler, Horizontal w/Conveyor	Packaging	2
Baler, Vertical	Packaging	1
Skid Steer Loader (Pallet Forks, Bucket 60 in., Grapple)	Various	1
Hopper, Self-Dumping, 2 cu yd, Gray	Various	16
Hopper, Self Dumping, 4 cu yd	Various	4
Containers, Recycled Plastic Mesh, Green	Various	18
Containers, Pro-Mini Cyclers, Island Model, Green w/Casters	Various	5
Containers, Pro-Mini Cyclers, Island Model, Brown	Various	2
Containers, Pro-Mini Cyclers, Island Model, Green	Various	9
Ramp, Mobile Loading w/Platform	Storage/Transport	1
Lockers, Wall, Oak	Storage	6
Shelving, Metal Storage, Warehouse	Storage	4
Antifreeze Recycling Unit	Antifreeze Recycling	3
Electrocoagulation Unit	Solvent Recycling	1
Aerosolv Puncturing System	Aerosol Can Recycling	2
Propane Canister Recycling System	Propane Can Recycling	1
Oil Filter Crusher	Oil Filter Recycling	1
Decal Machine	Labeling	1
Degausser	Computer Recycling	1
Food Pulpers	Food Waste	7

6.1.5.2 Contractor-Furnished Equipment

Under the terms of the RC service contract, the contractor is required to provide one 14-foot, 1.5-ton box truck; two stakebed trucks; and one 6k propane forklift. The contractor is reimbursed up to \$18,000 per year for the operations and maintenance of this equipment, including fuel.

6.1.5.3 Purchasing New Equipment

Before any equipment is purchased, the QRPM should determine if the equipment would be an advantageous investment for the QRP operation. To determine if this purchase would be advantageous for the Government, the RC and solid waste program managers need to determine how much money they

would save or lose by investing in the equipment. By using the Equipment Purchase Flow Chart, shown in Figure 5, and the Equipment Purchase Worksheet, shown in Figure 6, program managers can determine the cost or profit associated with purchasing new equipment. Calculations resulting in a deficit, meaning the QRP would lose money, indicate the purchase would not be economical. Calculations resulting in a profit, indicate the equipment would be beneficial to the program and should be purchased.

6.1.5.4 Planning for Equipment Replacement

The QRP budget needs to include planned equipment replacement. Different types of equipment have various life expectancies. Typically, more expensive pieces of equipment will last longer than less expensive items. For example, one can expect the horizontal baler that was placed in service in January 2005 to last approximately 10 years, but the MFH recycling containers may only last 3 to 5 years. Sometimes a manufacturer will specify the life expectancy for equipment, but often the equipment purchaser determines the expected life for each piece of equipment. Due to the tax and accounting implications of equipment purchases, depreciation, and equipment value, the Internal Revenue Service (IRS) has developed the "Table of Class Lives and Recovery Periods" (IRS 2005: 94). This table provides the expected life span of certain types of assets such as office equipment and computers. If the manufacturer does not specify an expected life span for a particular piece of equipment, the IRS publication can be referenced to assist in determining the expected life span for a particular piece of equipment.

Based on equipment costs, life expectancy, and purchase dates, the equipment depreciation can be calculated. Using the equipment depreciation, QRP personnel can determine the net worth of a piece of equipment and plan for equipment replacement by saving the associated depreciation each year. Depreciation is typically calculated by dividing the initial cost of the equipment by its life expectancy. Figure 7 illustrates the depreciation schedule and expected value for the two horizontal balers purchased in 2004. These two pieces of equipment were placed into service 1 January 2005 when QRP operations transitioned to on-base operation.

Appendix E documents the depreciation schedule and associated savings for equipment replacement. Most of the equipment that was purchased began operation in January 2005 when the operation of the RC converted back to Government-managed. Initial utilization data for several pieces of equipment obtained from DRMO could not be obtained, so it was estimated. An equipment depreciation schedule as shown in Table 6 summarizes the life expectancy and replacement date for each piece of equipment used for QRP operations.

6.1.6 Supply and Outreach Costs

The RC operations require numerous expendable items including office supplies, baling wire, and outreach materials to increase awareness of the installation recycling program. In FY06, Sheppard AFB spent approximately \$11,250 on expendable supply items. It is estimated that the installation will continue to expend this amount on supply and outreach materials.

6.1.7 Utility Costs

The RC and UWRC located in Building 2140 require electric, water, sewer, and natural gas service to operate. The funds for these utilities are paid out of the Sheppard AFB Operations and Maintenance Funds by the 82 CES. The annual utility cost for operating Building 2140 is \$16,500. Appendix F contains the utility cost estimate data provided by Sheppard AFB.

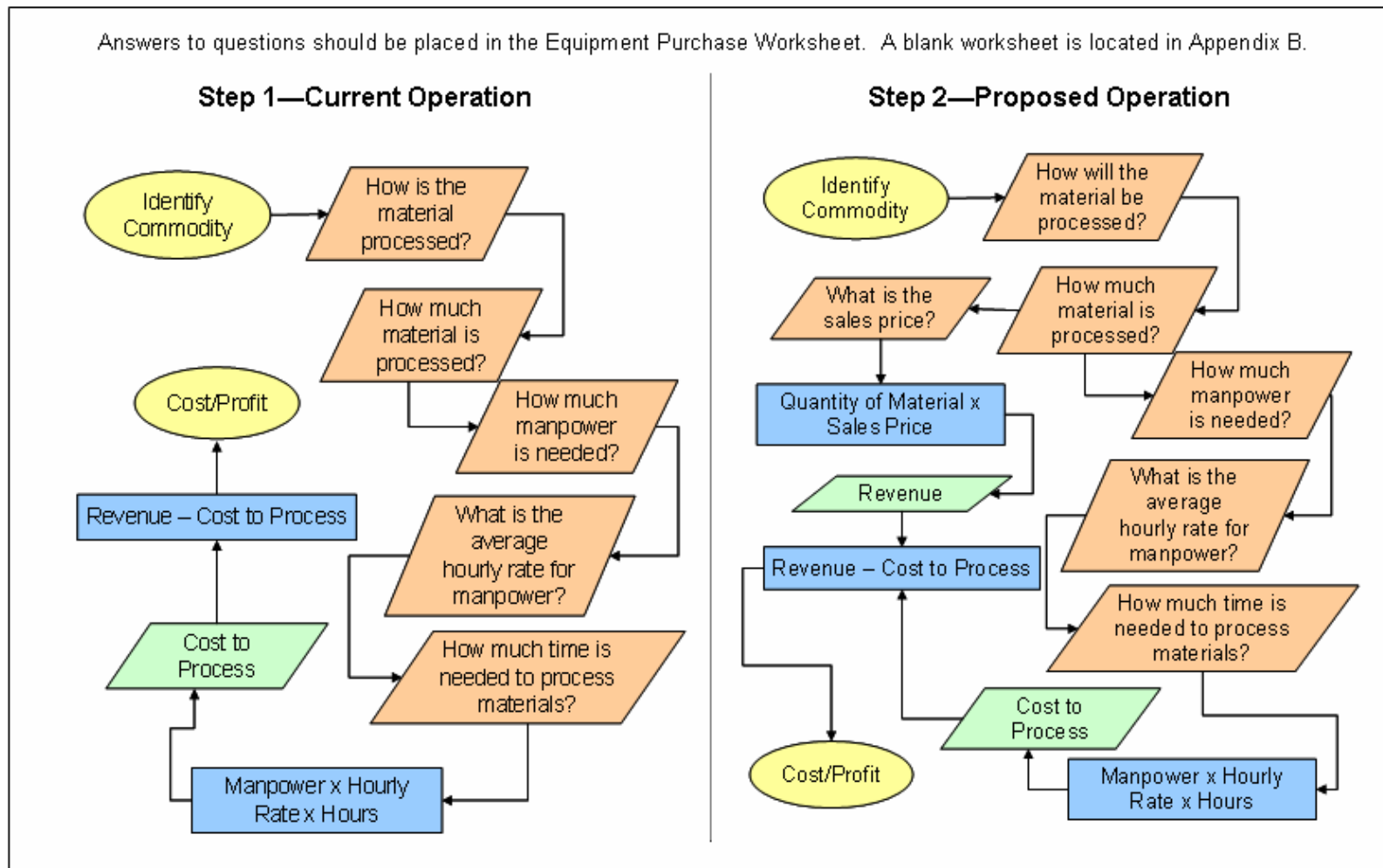


Figure 5
Equipment Purchase Flow Chart

Equipment Purchase Worksheet		82 CES/CEV Qualified Recycling Program Sheppard AFB, TX	
		Step 1 Current Operations	Step 2 Proposed Operations
Comparison of Operations			Unit of Measure
a. How is/will the material be processed?			Type of Process
Is the material processed manually, mechanically, or not at all?			
b. How much material is/will be processed?			lbs
Determine the weight of the material processed.			
c. How much manpower is needed?			Full Time Employees
How many people are needed to process the material?			
d. What is the average hourly rate per person?			\$/hour
Determine the average hourly pay rate for the employees needed to process the material.			
e. How much time to process?			hours
How many hours does it take to process material with the number of people specified in line c?			
f. What is the cost to process?			\$
Calculate the cost to process by multiplying lines c, d, and e. (Cost to Process=line c x line d x line e)			
g. What is the sales price?			\$/lb
Step 1 sales prices are based on past sales prices. A review of past payments received divided by the total quantity sold will provide the price per unit. To determine the sales price in Step 2, contact additional vendors to identify other prices.			
h. How much revenue is/will be generated per shipment?			\$
A shipment is defined as the amount listed in line b. To calculate revenue multiply lines b and g. (Revenue=line b x line g)			
i. Frequency of process?			per year
Frequency of process is defined as the number of times the amount of material listed in line b will be generated and sold.			
j. What is the Cost or Profit?			\$
Cost or Profit is determined by subtracting the costs to process, line f, from the revenues generated, line h. (Cost or Profit=line h - line f)			
k. Net difference between current and proposed operations?			\$
The net difference is calculated by subtracting the results on line j--Step 2 less Step 1. If the result is positive, continue completing worksheet. If the result is negative, current operations are more economical--stop here. (Net difference = Step 2 [line j] -Step 1 [line j])			
l. What is the Net Annual Revenue?			\$
Net revenues are calculated by multiplying lines j and i from Step 2. (Net Annual Revenue = line j x line i)			
Equipment Pay Back			
m. What type of equipment will be purchased?			
n. How much does the equipment cost?			\$
o. Equipment Pay Back			years
Equipment pay back refers to the amount of time it will take to pay for the cost of the equipment. Equipment pay back is calculated by dividing the cost of the equipment, line n, by the annual revenue, line l. (Equipment Pay Back = line n / line l)			

Figure 6
Equipment Purchase Worksheet

Sheppard AFB Texas					
Fixed Asset	Horizontal Balers				
Initial Cost	\$95,166				
Date Placed in Service	01/01/05				
Number of Months Owned in First Year	12				
Number of Units	2				
End of Year	Annual Depreciation	Remaining Value	Remaining Value Per Unit	Annual Savings for Replacement Purchase	Cumulative Savings
2005	\$9,517	\$85,649	\$42,825	\$9,517	\$9,517
2006	\$9,517	\$76,133	\$38,066	\$9,517	\$19,033
2007	\$9,517	\$66,616	\$33,308	\$9,517	\$28,550
2008	\$9,517	\$57,100	\$28,550	\$9,517	\$38,066
2009	\$9,517	\$47,583	\$23,791	\$9,517	\$47,583
2010	\$9,517	\$38,066	\$19,033	\$9,517	\$57,100
2011	\$9,517	\$28,550	\$14,275	\$9,517	\$66,616
2012	\$9,517	\$19,033	\$9,517	\$9,517	\$76,133
2013	\$9,517	\$9,517	\$4,758	\$9,517	\$85,649
2014	\$9,517	\$0	\$0	\$9,517	\$95,166
2015	\$0	\$0	\$0	\$0	\$95,166
Total	\$95,166			\$95,166	

Figure 7
Depreciation and Annual Revenue Savings Schedule—Horizontal Balers

Table 6
Equipment Depreciation

Description of Equipment	Units Purchased	Life Expectancy	Initial Use Date	Initial Total Cost	Replacement Date
Shrink Wrap Machine	1	8	Jan 2005	\$2,300	Jan 2013
Trailer, Tilt	7	6	Jan 2004	\$9,597	Jan 2010
Trailer, Utility 16 ft (White)	1	6	Jan 2005	\$2,499	Jan 2011
Trailer, Utility 16 ft (Green)	1	6	Jan 2005	\$2,499	Jan 2011
Trailer, Utility 18 ft (Charcoal)	1	6	Jan 2005	\$2,499	Jan 2011
Can Crusher and Conveyer	1	12	Jan 2005	\$6,850	Jan 2017
Glass Pulverizer	1	12	Jan 2005	\$52,631	Jan 2017
Recycling Trailer	2	6	Jan 2005	\$35,000	Jan 2011
Trailer, Car Hauler, 16 ft (Blue)	1	6	Jan 2006	\$2,500	Jan 2012
Baler, Horizontal	2	10	Jan 2005	\$95,166	Jan 2015

Table 6 (Continued)
Equipment Depreciation

Description of Equipment	Units Purchased	Life Expectancy	Initial Use Date	Initial Total Cost	Replacement Date
Baler, Vertical	1	10	Jan 2000	\$10,000	Jan 2010
Skid Steer	1	8	Jan 2005	\$19,363	Jan 2013
Hopper, Self-Dumping, 2 cu. yd.	16	8	Jan 2005	\$16,000	Jan 2013
Hopper, Self-Dumping, 4 cu. Yd.	4	8	Jan 2005	\$5,200	Jan 2013
Containers, Recycled Plastic Mesh, Green	18	8	Jan 2005	\$13,086	Jan 2013
Containers, Pro-Mini,	16	8	Jan 2000	\$10,480	Jan 2008
Antifreeze Recycling Unit	2	12	Jan 2000	\$4,990	Jan 2012
Electrocoagulation Unit	2	12	Jan 2002	\$25,000	Jan 2014
Aerosolv Puncturing System	1	12	Jan 2006	\$900	Jan 2018
Propane Canister Recycling System	1	12	Jan 2002	\$650	Jan 2014
CD Destroyer	1	10	Jan 2003	\$2,300	Jan 2013
Oil Filter Crusher	1	12	Jan 2006	\$1,100	Jan 2018
Decal Machine	1	10	Jan 2005	\$29,500	Jan 2015
Degausser	1	6	Jan 2003	\$43,561	Jan 2009
Office Equipment	Numerous	6	Jan 2005	\$17,935	Jan 2011
Small Handling Equipment	Numerous	8	Jan 2005	\$2,300	Jan 2013
Food Pulpers	7	12	Jun 2004	\$70,000	Jun 2016

6.2 SUMMARY OF COSTS

The total program cost in FY06 was \$531,160. Table 7 summarizes the total cost to operate the solid waste diversion program at Sheppard AFB. The program is expected to cost \$590,743 in FY07 based on the historical and projected costs for each program element previously discussed. The projected increase in program cost from FY06 to FY07 is due primarily to equipment replacement costs.

6.3 REVENUE

6.3.1 Funding from HQ AETC

Sheppard AFB receives funding to operate the QRP from HQ AETC. Proceeds from the direct sale of recyclables and reimbursement from MFH, hospital, and Euro-NATO Joint Jet Pilot Training (ENJJPT) accounts cover the cost of the recycling services provided to these operations. From FY04–06 HQ AETC provided \$117,000 annually to Sheppard AFB for recycling operations. It is assumed that HQ AETC will continue to fund the program at this level.

Table 7
Summary of QRP Operational Costs FY05–FY07

QRP Operational Requirements	Actual FY05 Annual Operational Cost	Actual FY06 Operational Cost	Projected FY07 Annual Operational Cost
Recycling Center Contract	\$275,707	\$295,536	\$295,536
Universal Waste Recycling	\$82,391	\$138,503	\$144,899
C&D Recycling	\$18,000	\$18,000	\$18,000
Composting Operations	\$3,894	\$51,371	\$52,046
Equipment Replacement Reserve	\$0	\$0	\$51,512
Supply and Outreach Programs	\$33,138	\$11,250	\$11,250
Utility Costs	\$16,500	\$16,500	\$16,500
Equipment Maintenance	\$0	\$0	\$1,000
Total Cost	\$429,630	\$531,160	\$590,743

Note: In FY05, the recycling contract was for 9 months, January through September.

6.3.2 Reimbursements from Sheppard AFB Users

The Sheppard AFB recycling program is reimbursed for the recycling collection services provided to these organizations. Currently, MFH, the hospital, and the ENJJPT reimburse the recycling program. Table 8 shows the reimbursements received by the recycling program from FY04–06. It should be noted that Sheppard AFB modified the method for determining reimbursement in FY06. The new calculation method determines reimbursement based on level of effort associated with the collection of recyclables from each of the impacted organizations. While the new method changed the individual organizational reimbursement amount, the overall reimbursement to the recycling program remained steady.

Table 8
Reimbursement Proceeds FY04–FY06

Fiscal Year	FY 2004	FY 2005	FY 2006
MFH	\$94,556.00	\$120,294.30	\$62,775.00
Hospital	\$8,908.00	\$11,839.50	\$27,219.00
ENJJPT	\$8,908.00	\$11,839.50	\$24,005.00
TOTAL	\$112,372.00	\$143,974.30	\$113,999.00

6.3.3 Direct Sales Revenue Generation

Sheppard AFB converted its recycling operations from a contractor-operated program to Government-manager, contractor-operated in January 2005. Under the contractor-operated program, the installation paid a contractor to collect, process, and sell recyclable materials. The contractor retained all proceeds from the sale of the recyclable commodities resulting in \$0 revenue for the QRP. Under the Government-managed, contractor-operated system, the installation pays the contractor to collect, process, and sell the recyclable commodities, but the installation retains the proceeds from the recyclable sales.

Table 9 compares RC proceeds from FY04 through FY06. As shown in Table 9, the recycling revenues have increased dramatically over the past year primarily due to the fact that the program has matured. It is anticipated the future revenues will be similar to FY06 revenues, with the goal being continued increases in revenue. The proceeds shown in Table 9 include Defense Commissary Agency (DECA) and AAFES cardboard sales. During CY05, DECA and the QRP shared the proceeds from the sale of cardboard from DECA operations. Beginning in CY06, DECA retained all the proceeds from the sale of cardboard from its facility so the QRP will lose this revenue. The QRP and AAFES continue to share proceeds from recycling operations at AAFES locations. Currently, AAFES retains 50 percent of the cardboard sales from its facilities and the QRP retains the remaining 50 percent of the proceeds. The QRP and RC managers should continue to track and trend revenue generation over time to determine economic health of the program.

Table 9
Historical Revenue Generation

Fiscal Year	FY 2004	FY 2005	FY 2006
DRMO Sales	\$0.00	\$1003.00	\$15,673.00
Paper	\$0.00	\$2,231.38	\$6,254.84
Cardboard	\$0.00	\$14,980.10	\$29,848.69
Cardboard Proceeds from AAFES	\$0.00	\$644.48	\$1,237.90
Cardboard Proceeds from DECA	\$0.00	\$1,857.02	\$1,760.83
Tin Cans	\$0.00	\$342.00	\$768.40
Aluminum Cans	\$0.00	\$4,784.00	\$8,522.00
Newspaper/Magazines	\$0.00	\$645.60	\$344.23
Glass	\$0.00	\$0.00	\$0.00
Plastic	\$0.00	\$1,520.72	\$1,539.70
Scrap Metal	\$0.00	\$703.65	\$698.20
Total	\$0.00	\$28,711.95	\$66,647.79

Figure 8 depicts the revenue generated by the RC based on commodity. When comparing Figure 1 with Figure 8, cardboard, paper, and aluminum cans generated 91 percent of the revenue for the QRP and comprised 71 percent of the materials processed; these commodities are currently providing the highest rate of return. Specifically, aluminum makes up only 1 percent of the commodities processed but provides 17 percent of the revenue. Sheppard AFB should maximize their opportunities by marketing these high return commodities through education and awareness programs.

6.4 COST BENEFIT ANALYSIS

Qualified recycling programs are established in accordance with DoD Instruction 4715.4, which requires all DoD installations to recycle. In April 2006, HQ United States Air Force issued the Solid Waste Diversion and QRP Policy, which directs installations to recycle and, whenever possible, conduct direct sales of recyclable commodities through the QRP and do so in a manner to provide economic benefit to the Government. To meet this requirement, QRPs may not always generate a profit but should provide an economic benefit when compared with disposal using landfilling or incineration.

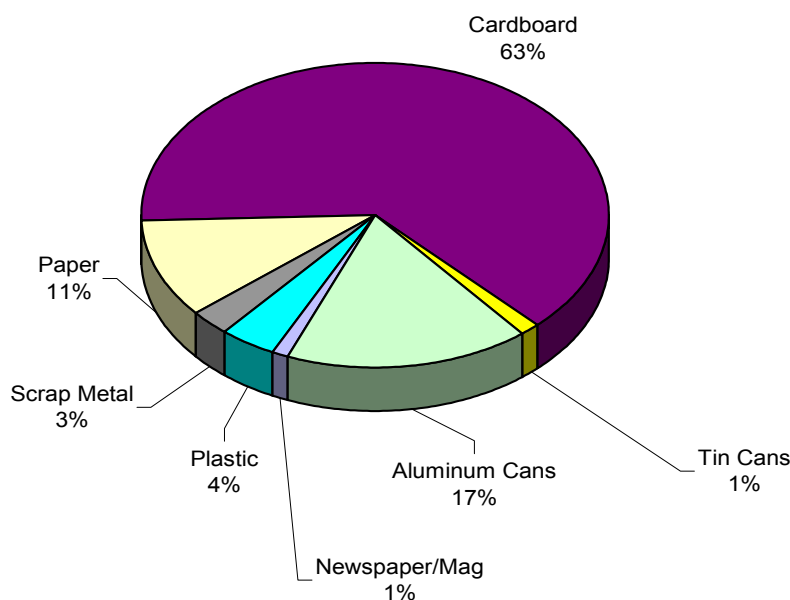


Figure 8
Percentage of Recycling Center Revenues by Commodity

When determining the profitability of the QRP, the following calculation should be used:

$$(\text{Proceeds Generated} + \text{Associated Cost Avoidance}) - \text{QRP Expenses} = \text{Net Cost/Benefit}$$

A profit and loss statement, or income statement, is a method to measure the performance of a business and determine if the business is generating a profit—the income statement reports the revenues less expenses for a specified period of time. The Air Force operates much differently than a business, but the overall goal is very similar. A business operates to make a profit, whereas the Government operates to ensure an economic benefit. The Government's goal is to make wise business choices that ensure an economic benefit at minimal cost to the Government.

A historical cost benefit analysis (CBA) for the QRP was accomplished for FY04 through FY06 (Figure 9). The CBA is based on a typical profit-and-loss statement for a business but applies the Air Force equation for determining if a QRP is economical. When cost avoidance is omitted, the CBA for all 3 years indicates the QRP operated at a loss; but when disposal cost avoidance is included, Sheppard AFB experienced a total installation benefit of \$325,113 in FY04; \$6,377,104 in FY05; and \$549,742 in FY06. It should be noted that a large airfield ramp/apron project was accomplished in FY05 that resulted in over 55,550 tons of waste being diverted and provided a benefit of over \$6 million; thus accounting for the large monetary benefit for FY05.

Historical Cost-Benefit Analysis			82 CES/CEV Qualified Recycling Program Sheppard AFB, TX			15-Nov-2006
Benefit	Fiscal Year 2004		Fiscal Year 2005		Fiscal Year 2006	
	Amount	% of Benefit	Amount	% of Benefit	Amount	% of Benefit
Total Sales	\$0	0%	\$28,712	0%	\$66,648	6%
Direct Sales						
Shredded Paper	\$0	0%	\$1,585	0%	\$3,522	0%
Mixed Paper	\$0	0%	\$216	0%	\$2,733	0%
Bond Paper	\$0	0%	\$430	0%	\$0	0%
Cardboard	\$0	0%	\$14,980	0%	\$29,849	3%
Cardboard proceeds from AAFES	\$0	0%	\$644	0%	\$1,238	0%
Cardboard proceeds from DECA	\$0	0%	\$1,857	0%	\$1,761	0%
Tin Cans	\$0	0%	\$342	0%	\$768	0%
Aluminum Cans	\$0	0%	\$4,784	0%	\$8,522	1%
Newspaper/Mag	\$0	0%	\$646	0%	\$344	0%
Glass	\$0	0%	\$0	0%	\$0	0%
Plastic	\$0	0%	\$1,521	0%	\$1,540	0%
Scrap Metal	\$0	0%	\$704	0%	\$698	0%
DRMO Sales	\$0	0%	\$1,003	0%	\$15,673	1%
Outstanding Revenue	\$0	0%	\$0	0%	\$0	0%
Reimbursement proceeds	\$112,372	18%	\$143,974	2%	\$113,999	11%
UWRC Disposal Cost Avoidance	\$101,721	16%	\$126,733	2%	\$175,478	16%
Landfill Disposal Cost Avoidance (DCA)	\$405,874	65%	\$6,507,314	96%	\$724,827	67%
Net Benefit	\$619,967	100%	\$6,806,733	100%	\$1,080,952	100%
Program Cost	Fiscal Year 2004		Fiscal Year 2005		Fiscal Year 2006	
	Amount	% of Benefit	Amount	% of Benefit	Amount	% of Benefit
Collection, Processing, and Sales						
Recycling Center Contract	\$216,534	35%	\$275,707	4%	\$295,536	27%
UWRC Operating Cost	\$60,320	10%	\$82,391	1%	\$138,503	13%
CE Horizontal Shop C&D recycling	\$18,000	3%	\$18,000	0%	\$18,000	2%
Composting Operations	\$0	0%	\$3,894	0%	\$51,371	5%
Equipment Replacement Reserve	\$0	0%	\$0	0%	\$0	0%
Supply and Outreach Programs	\$0	0%	\$33,138	0%	\$11,250	1%
Utility Costs	\$0	0%	\$16,500	0%	\$16,500	2%
Equipment Maintenance	\$0	0%	\$0	0%	\$0	0%
Total Program Cost	\$294,854	48%	\$429,630	6%	\$531,160	49%
Gross Benefit (Cost) [Without DCA and UWRC]	(182,482)	-29%	(256,944)	-4%	(350,513)	-32%
Total Net Base Benefit (Cost)	\$325,113	52%	\$6,377,103	94%	\$549,792	51%
HQ Cost/Benefit Analysis	Fiscal Year 2004		Fiscal Year 2005		Fiscal Year 2006	
	Amount	% Savings	Amount	% Savings	Amount	% Savings
Total Program Cost	\$294,854		\$429,630		\$531,160	
HQ AETC Funding	\$117,000		\$117,000		\$117,000	
HQ AETC Benefit (Cost)	\$177,854	60%	\$312,630	73%	\$414,160	78%
Total AF Cost/Benefit Analysis	Fiscal Year 2004		Fiscal Year 2005		Fiscal Year 2006	
	Amount	% Saving	Amount	% Savings	Amount	% Savings
Base Level Benefit (Cost)	\$325,113		\$6,377,103		\$549,792	
HQ AETC Benefit (Cost)	\$177,854		\$312,630		\$414,160	
Total AF Benefit (Cost)	\$502,967	171%	\$6,689,733	1557%	\$963,952	181%

Figure 9
Historical Cost Benefit Analysis

The benefit to HQ AETC was also calculated. The HQ AETC benefit is determined by subtracting the HQ AETC funding amount from the overall program cost since HQ AETC pollution prevention is not completely funding the diversion program. Consequently, the HQ AETC benefit was \$177,854; \$312,630; and \$414,160 for FY04, FY05, and FY06, respectively. The total Air Force benefit is the combination of installation level and HQ AETC benefit. Over the 3 years shown in Figure 8, Sheppard AFB diversion programs saved the Air Force over \$8,150,000. The percent savings for the Air Force is also shown. This number indicates the benefit obtained for each dollar invested in the diversion programs. An increasing percent savings over time indicates improvement in program efficiency. If the percent savings falls below 100, the program is not performing economically, and a thorough review is needed.

6.4.1 Increasing Revenues

The Sheppard AFB recycling program began selling recyclable commodities in January 2005. Since this time, recycling revenues have increased dramatically as the program matured. The QRP and RC manager will continue to track recycling revenues to determine future initiatives and program focus. Sheppard AFB can increase their QRP revenues by increasing recycling participation and processing a larger percentage of recyclable commodities, especially paper and plastic commodities. Based on the calculations in Section 4.1, the RC is processing 24.5 percent of the potential paper and paperboard products generated on Sheppard AFB. If Sheppard AFB could increase the amount of paper processed by 15 percent, from 173 tons to 200 tons, the revenue would increase by \$2,000. Similarly, if cardboard processing could increase 15 percent to 673 tons per year, the revenue would potentially increase \$8,700. Both of these increases would still only yield 26.5 percent recovery rate for the installation based on the EPA estimated generation rate.

Similarly, Sheppard AFB is only collecting 2.5 percent of the estimated plastic waste. If Sheppard AFB could collect 20 percent, or 213 tons per year, the revenue from the sale of plastic would go from \$1,539 to \$12,545. To achieve these increases in participation and processing, the installation will need to continue to provide proactive education and outreach programs as well as look for additional methods to increase recycling participation such as mandatory recycling by MFH residents.

6.4.2 Annual and 3-Year Income Projections

Annual and 3-year income projections are tools to assist the QRP program manager with monitoring program performance, determining future program needs, and establishing/monitoring goals for the QRP program. The annual cost benefit projection worksheet, Figure 10, is designed to analyze actual and projected data for the current fiscal year. As sales, cost, and diversion data is received, it can be entered into the projection worksheet. The QRPM can use the information in two ways.

The first method is to project actual data into the future. For example, if the installation has \$10,000 in cardboard sales for the first half of the year, it could be assumed that the installation will have about \$10,000 in sales for the second half of the year. Using this projection, the manager can estimate program performance for the entire fiscal year. This projection worksheet also allows the manager to track progress towards annual program goals.

If the installation's goal is to have \$30,000 in total revenue from cardboard sales, the annual projection worksheet would project the installations progress towards meeting that goal. In this example, the annual projection worksheet would show that the installation is not going to meet the \$30,000 annual goal. The manager would then have to determine how to increase revenue to meet the annual goal.

Annual Cost-Benefit Projection			82 CES/CEV Qualified Recycling Program Sheppard AFB, TX			
Benefit	Actuals 1st and 2nd Quarters FY 20__		Projected 3rd and 4th Quarters FY 20__		Projected FY 20__	
	Amount	% of Benefit	Amount	% of Benefit	Amount	% of Benefit
Total Sales	\$0		\$0		\$0	
Direct Sales	\$0		\$0		\$0	
Shredded Paper	\$0		\$0		\$0	
Mixed Paper	\$0		\$0		\$0	
Bond Paper	\$0		\$0		\$0	
Cardboard	\$0		\$0		\$0	
Cardboard proceeds from AAFES	\$0		\$0		\$0	
Cardboard proceeds from DECA	\$0		\$0		\$0	
Tin Cans	\$0		\$0		\$0	
Aluminum Cans	\$0		\$0		\$0	
Newspaper/Mag	\$0		\$0		\$0	
Glass	\$0		\$0		\$0	
Plastic	\$0		\$0		\$0	
Scrap Metal	\$0		\$0		\$0	
DRMO Sales	\$0		\$0		\$0	
Outstanding Revenue	\$0		\$0		\$0	
Reimbursement proceeds	\$0		\$0		\$0	
UWRC Disposal Cost Avoidance	\$0		\$0		\$0	
Landfill Disposal Cost Avoidance (DCA)	\$0		\$0		\$0	
Net Benefit	\$0		\$0		\$0	
Program Cost	Actuals 1st and 2nd Quarters FY 20__		Projected 3rd and 4th Quarters FY 20__		Projected FY 20__	
	Amount	% of Benefit	Amount	% of Benefit	Amount	% of Benefit
Collection, Processing, and Sales						
Recycling Center Contract	\$0		\$0		\$0	
UWRC Operating Cost	\$0		\$0		\$0	
CE Horizontal Shop C&D recycling	\$0		\$0		\$0	
Composting Operations	\$0		\$0		\$0	
Equipment Replacement Reserve	\$0		\$0		\$0	
Supply and Outreach Programs	\$0		\$0		\$0	
Utility Costs	\$0		\$0		\$0	
Equipment Maintenance	\$0		\$0		\$0	
Total Program Cost	\$0		\$0		\$0	
Gross Benefit (Cost) [Without DCA]	0		0		0	
Total Base Benefit (Cost)	\$0		\$0		\$0	
HQ Cost/Benefit Analysis	Actuals 1st and 2nd Quarters FY 20__		Projected 3rd and 4th Quarters FY 20__		Projected FY 20__	
	Amount	% Savings	Amount	% Savings	Amount	% Savings
Program Cost	\$0		\$0		\$0	
HQ AETC Funding	\$0		\$0		\$0	
HQ AETC Benefit (Cost)	\$0		\$0		\$0	
Total AF Cost/Benefit Analysis	Actuals 1st and 2nd Quarters FY 20__		Projected 3rd and 4th Quarters FY 20__		Projected FY 20__	
	Amount	% Savings	Amount	% Savings	Amount	% Savings
Base Level Benefit (Cost)	\$0		\$0		\$0	
HQ AETC Benefit (Cost)	\$0		\$0		\$0	
Total AF Benefit (Cost)	\$0		\$0		\$0	

Figure 10
Annual Cost Benefit Projection Worksheet

The 3-year projection worksheet is a planning tool that allows managers to assess the impacts of future recycling and diversion initiatives. The 3-year projection shown in Figure 11 is based on the following factors:

- Revenues from recyclable sales will continue to increase as the QRP continues to mature and participation rates continue to rise. It is estimated that revenues will increase by 15 percent in FY07 due to the increased participation and efficiencies gained as the program matures. It is estimated that the revenues will continue to grow by 10 percent annually in FY08 and FY09.
- Waste collection and disposal costs will continue to increase for Sheppard AFB. Over the past 3 years, there has been a 17 percent increase per year in waste collection and disposal fees. The installation is currently paying \$121 per ton for disposal. If solid waste disposal cost continues to increase by 17 percent annually, disposal fees will be \$142, \$166, and \$194 per ton in FY07, FY08, and FY09, respectively.
- It is assumed that HQ AETC and reimbursement from MFH, the hospital, and the ENJJPT will remain relatively constant and at the historical levels over the next 3 years. It is also assumed that a 3 percent cost of living increase per year will be applied to the salary of the UWRC Government employee. If the UWRC manager position is upgraded to a GS-09, an updated 3-year projection will be necessary to account for the cost increase.

Unlike the historical cost benefit analysis, the annual and 3-year projection worksheet accounts for equipment replacement. By following the depreciation and annual savings worksheet, Appendix E, QRPMs can determine how much money needs to be set aside each year for equipment purchases. By continuing to use CBA worksheets, the equipment purchasing worksheets, equipment replacement planning tool, and incorporating beneficial programmatic changes throughout the QRP, Sheppard AFB will continue to operate an economically beneficial waste diversion program.

7.0 ROLES AND RESPONSIBILITIES

The success of the QRP program requires support at all levels within the chain of command (Figure 12); therefore, it is important that all individuals know and understand their roles and responsibilities.

7.1 INSTALLATION COMMANDER

The installation commander maintains overall responsibility for establishing a QRP and ensuring it is operated and maintained in accordance with 10 United States Code (U.S.C.) 2577, DODI 4715.4, and Air Force Instruction (AFI) 32-7080. The installation commander must put in place management controls to ensure sales of recyclable materials are conducted according to the law. Management controls for a QRP include the following:

- Written designation of a QRPM;
- Maintenance of required records;
- Disposition of recycling proceeds controlled by Recycling/Solid Waste Working Group; and
- Regular audits of the QRP.

Three Year Cost-Benefit Projection			82 CES/CEV Qualified Recycling Program Sheppard AFB, TX				15-Nov-2006
Benefit	Fiscal Year 2007		Fiscal Year 2008		Fiscal Year 2009		
	Amount	% of Benefit	Amount	% of Benefit	Amount	% of Benefit	
Total Sales	\$70,096	8%	\$72,926	7%	\$75,897	6%	
Direct Sales		0%		0%		0%	
Shredded Paper	\$4,050	0%	\$4,253	0%	\$4,465	0%	
Mixed Paper	\$3,143	0%	\$3,300	0%	\$3,465	0%	
Bond Paper	\$0	0%	\$0	0%	\$0	0%	
Cardboard	\$34,326	4%	\$36,042	3%	\$37,844	3%	
Cardboard proceeds from AAFES	\$1,424	0%	\$1,495	0%	\$1,570	0%	
Cardboard proceeds from DECA	\$0	0%	\$0	0%	\$0	0%	
Tin Cans	\$884	0%	\$928	0%	\$974	0%	
Aluminum Cans	\$9,800	1%	\$10,290	1%	\$10,805	1%	
Newspaper/Mag	\$396	0%	\$416	0%	\$436	0%	
Glass	\$0	0%	\$0	0%	\$0	0%	
Plastic	\$1,771	0%	\$1,859	0%	\$1,952	0%	
Scrap Metal	\$803	0%	\$843	0%	\$885	0%	
DRMO Sales	\$13,500	1%	\$13,500	1%	\$13,500	1%	
Outstanding Revenue	\$0	0%	\$0	0%	\$0	0%	
Reimbursement proceeds	\$114,000	12%	\$114,000	11%	\$114,000	10%	
UWRC Disposal Cost Avoidance	\$257,123	28%	\$257,123	25%	\$257,123	22%	
Landfill Disposal Cost Avoidance (DCA)	\$586,988	64%	\$700,507	68%	\$836,113	72%	
Net Benefit	\$914,207	100%	\$1,030,556	100%	\$1,169,133	100%	
Program Cost	Fiscal Year 2007		Fiscal Year 2008		Fiscal Year 2009		
	Amount	% of Benefit	Amount	% of Benefit	Amount	% of Benefit	
Collection, Processing, and Sales							
Recycling Center Contract	\$295,536	32%	\$295,536	29%	\$295,536	25%	
UWRC Operating Cost	\$144,899	16%	\$145,513	14%	\$146,146	13%	
CE Horizontal Shop C&D recycling	\$18,000	2%	\$18,000	2%	\$18,000	2%	
Composting Operations	\$52,046	6%	\$53,126	5%	\$53,126	5%	
Equipment Replacement Reserve	\$51,512	6%	\$51,512	5%	\$51,512	4%	
Supply and Outreach Programs	\$11,250	1%	\$11,250	1%	\$11,250	1%	
Utility Costs	\$16,500	2%	\$16,500	2%	\$16,500	1%	
Equipment Maintenance	\$1,000	0%	\$1,000	0%	\$1,000	0%	
Total Program Cost	\$590,743	65%	\$592,436	57%	\$593,069	51%	
Gross Benefit (Cost) [Without DCA]	(406,647)	-44%	(405,511)	-39%	(403,172)	-34%	
Total Net Base Benefit (Cost)	\$323,464	35%	\$438,119	43%	\$576,063	49%	
HQ Cost/Benefit Analysis	Fiscal Year 2007		Fiscal Year 2008		Fiscal Year 2009		
	Amount	% Savings	Amount	% Savings	Amount	% Savings	
Total Program Cost	\$590,743		\$592,436		\$593,069		
HQ AETC Funding	\$117,000		\$117,000		\$117,000		
HQ AETC Benefit (Cost)	\$473,743	80%	\$475,436	80%	\$476,069	80%	
Total AF Cost/Benefit Analysis	Fiscal Year 2007		Fiscal Year 2008		Fiscal Year 2009		
	Amount	% Savings	Amount	% Savings	Amount	% Savings	
Base Level Benefit (Cost)	\$323,464		\$438,119		\$576,063		
HQ AETC Benefit (Cost)	\$473,743		\$475,436		\$476,069		
Total AF Benefit (Cost)	\$797,207	135%	\$913,556	154%	\$1,052,133	177%	

Figure 11
3-Year Cost Benefit Projection Worksheet

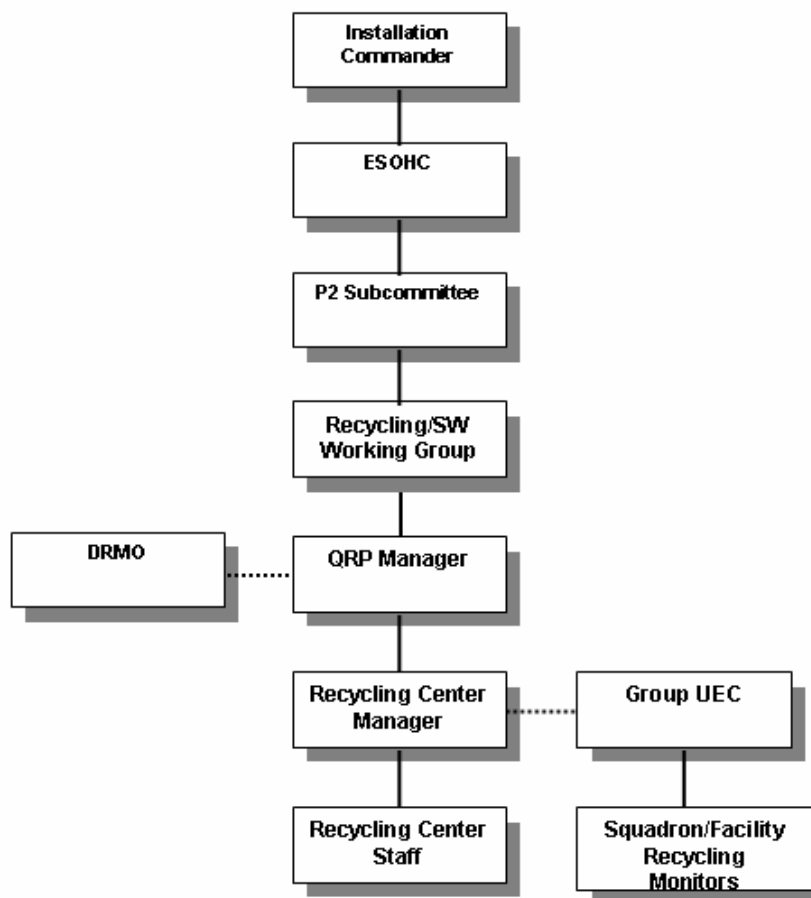


Figure 12
QRP Organization

7.2 ENVIRONMENTAL, SAFETY, AND OCCUPATIONAL HEALTH COUNCIL

In accordance with AFI 90-8, Environmental, Safety, and Occupational Health (ESOH), each installation will establish an ESOHC. According to AFI 90-801, the Environmental, Safety, and Occupational Health Council (ESOHC) is the executive level steering group that reviews policies and programs, establishes goals, monitors progress, and advises leadership. The Sheppard AFB ESOHC is chaired by the installation commander and includes representatives from the following organizations: 80 FTW/CC, 82 MSG/CC, 82 TRG/CC, 782 TRG/CC, 882 TRG/CC, 982 TRG/CC, 82 MDG/CC, 82 TRW/JA, 82 TRW/SE, 82 TRW/PA, 82 CES/CC, AFOSI, DRMO, and AAFES. Their responsibilities include:

- Ensure ESOH management decisions enhance mission capability;
- Oversee ESOH Management Systems (ESOHMS) implementation and ESOH performance to ensure continual improvement consistent with Air Force ESOH goals and objectives;

- Establish/Execute performance-based goals, measure objectives and targets, provide ESOH guidance to subordinate organizations as required; and
- Provide senior leadership support and guidance to implement and sustain the ESOHMS and conducting annual assessments of the impacts of ESOH risk and cost on mission performance.

7.3 POLLUTION PREVENTION SUBCOMMITTEE

The P2 Subcommittee was established by the ESOHC to ensure compliance with all applicable laws and regulations relating to pollution prevention. The P2 Subcommittee accomplishes these objectives by conducting open meetings to exchange information between host and tenant organizations at Sheppard AFB. Each wing and group is represented on the P2 Subcommittee, and the meetings are open to any interested installation personnel. The ESOHC appoints the P2 Subcommittee chair. The P2 Subcommittee reports to the ESOHC on matters regarding the management of the QRP. The P2 Subcommittee resolves major issues associated with the QRP and provides recommendations to the ESOHC. Examples include:

- Providing recommendations for procuring recycling equipment;
- Reviewing recycling audit report prepared by the comptroller;
- Reviewing and recommending approval of recycling facility improvement projects;
- Reviewing the QRP program in conjunction with environmental compliance and the comptroller audit; and
- Proposing the use of excess funds.

7.4 RECYCLING/SOLID WASTE WORKING GROUP

The working group's goal is to implement, sustain, and improve a model solid waste/recycling program at Sheppard AFB to meet the diversion and cost-effective requirements in the DoD Measures of Merit and Sheppard AFB's [*ESOH Management Plan*](#). The working group discusses solid waste and recycling issues associated with individual units and serves as an information hub for disseminating and retrieving information to and from the P2, QRP, and group representatives (i.e., Unit Environmental Coordinators (UECs) and/or Facility/Recycling Monitors). The QRPM and/or alternate serve as the working group chairperson. The committee should consist of individuals, usually UECs, from the following groups:

- | | |
|-----------------------------|--|
| • 82d Mission Support Group | • 82d Comptroller Office* |
| • 82d Medical Group | • 82d Contracting Office* |
| • 782d Training Group | • 82d Legal Office* |
| • 982d Training Group | • 82d Public Affairs Office* |
| • 80th Flying Training Wing | • Defense Commissary Agency |
| • 82d Training Group | • Army and Air Force Exchange Service |
| • 882d Training Group | • Defense Reutilization and Marketing Office |

* As Necessary

The Recycling/Solid Waste Working Group has the following responsibilities:

- Maintains membership as outlined in Sheppard AFB Instruction 32-7003, Section 7.4.1;
- Develops policies/procedures for the installation recycling program;
- Provides recycling program guidance to the QRPM; and
- Ensures data gathering and reporting requirements are being conducted in accordance with this instruction; ESOHC guidance; and applicable governing USAF, DoD, Executive Orders, State, and local laws, directives, rules, and regulations.

7.5 QUALIFIED RECYCLING PROGRAM MANAGER

The QRPM is appointed by the wing commander or his/her designee and is knowledgeable in the areas of solid waste management and recycling. The QRPM is responsible for overseeing proper execution of all recycling programs and their compliance with federal, state, installation, and local guidance. These duties and responsibilities include, as a minimum:

- Programming funding for the operation of the QRP to include equipment, supplies, vehicles, manpower, and facility costs;
- Consolidating reports from all installation recycling activities;
- Reporting diversion metrics to the P2 chief and/or solid waste manager;
- Submitting the Deputy Under Secretary of Defense (Environmental Security) (DUSDES) reports to HQ AETC;
- Ensuring environmental compliance and DoD Measure of Merit goals are met;
- Serving as the chairperson to the Recycling/Solid Waste Working Group;
- Attending and participating in the P2 Subcommittee meetings;
- Establishing an accounting and tracking system for QRP finances and materials;
- Serving as the RRRP account treasurer;
- Managing and accounting for costs and revenues incurred by the recycling program;
- Assuring recycling revenues are used in accordance with regulations–Title 32 Code of Federal Regulations Section 172 (32 CFR 172);
- Maintaining accounting records and supporting documentation for all proceeds received from the sale of recyclable materials and for disbursement of funds for authorized purposes;

- Working with the Financial Management Office to track the receiving, recording, and depositing of funds generated through the QRP;
- Coordinating and notifying DRMO pertaining to the RRRP account to assure sales proceeds are managed and deposited properly;
- Appointing or determining the RC manager;
- Working with the RC manager to assure success of the QRP program and to resolve programmatic issues;
- Coordinating with contracting officers, contractors and installation personnel in support of all recycling operations;
- Coordinating with Group UECs to provide installation personnel general QRP awareness/education regarding installation requirements and procedures. This may include briefing the recycling program as requested at wing, group, squadron, flight, contractor, tenant, or any installation gathering as requested; and
- Advising all organizations on the collection and disposition requirements for solid waste and recyclables as necessary.

7.6 RECYCLING CENTER MANAGER

The RC manager will report directly to the QRPM and will be responsible for:

- Knowing the types of materials that can and cannot be sold through the QRP;
- Conducting market research, sales, packaging, and transport of the recyclables;
- Maintaining records regarding the sales of merchandise;
- Preparing monthly and quarterly status reports for the QRPM as necessary;
- Quantifying and tracking materials received at the RC that are diverted from landfills;
- Reporting quarterly diversion/recyclable information to QRPM;
- Adhering to all policies regarding the handling of secure, official use only, and Privacy Act documents; attending security briefings on topics such as protection of classified documents; copying or discussing classified information; and security items relating to communications security (COMSEC), operations security (OPSEC), or essential elements of friendly information (EEFIs);
- Serving as a liaison to installation personnel and customers for issues pertaining to recycling;
- Supervising RC personnel;

- Ensuring employees are trained regarding the processing and storage of recyclable materials;
- Maintaining employee training records regarding safety, equipment and vehicle operations, and proper management of recyclables;
- Establishing collection routes and schedules to ensure recyclables are collected routinely;
- Maintaining necessary licenses and training to operate equipment and vehicles;
- Coordinating with facility recycling managers, squadron recycling managers, and UECs to identify unit requirements for recycling, such as type and size of container;
- Attending and participating in the Recycling/Solid Waste Working Group meetings and functions;
- Overall management of the RC;
- Ensuring RC is maintained to discourage the presence of vectors, pests, rodents, and odors;
- Establishing hours of operation for the RC;
- Ensuring all valuable equipment and commodities are secured;
- Conducting operator inspections of equipment and vehicles;
- Establishing routine maintenance schedules for equipment and vehicles;
- Informing QRPM in regards to the operation of the RC; and
- Identifying equipment, vehicle, and supply requirements necessary to operate the facility.

7.7 GROUP UNIT ENVIRONMENTAL COORDINATORS

Group UECs serve as the points of contact for the QRPM and respective groups for reporting and disseminating recycling information. An appointment letter template can be found in Appendix G. Group UECs are responsible for the following:

- Serve as the group recycling monitor. Address/Direct any questions or concerns regarding recycling within the group in an effective and timely manner to the QRPM.
- Attend the Recycling/Solid Waste Working Group meetings held by the QRPM.
- Disseminate information to the squadron/facility recycling monitors from the QRPM. Assist in development of practices/procedures within their area of responsibility. Support the installation-wide recycling program from the group perspective.

- Maintain an updated list of squadron/facility recycling monitors within their group and provide any changes, updates, appointments to the QRPM. An appointment letter template can be found using the following link:

\\Cesfs1\enviro\RECYCLING & SOLID WASTE\SHARED_RECYCLING\RECYCLING_MONITORS

- Collect individual squadron/facility recycling monitor monthly reports from the squadron recycling monitors. Input information into the quarterly metric spreadsheet located in the [SHARED_RECYCLING](#) folder on Installation Comprehensive Environmental Database, for their respective group. Inputs are due by the seventh day of each month.

7.8 SQUADRON RECYCLING MONITORS

Squadron recycling monitors—primary/alternate—are responsible for:

- Attending all recycling meetings held by their respective group UEC.
- Briefing the recycling program as required in squadron commander's calls.
- Implementing measures/programs within the squadron to effectively carry out the base-wide recycling program goals and objectives.
- Recommending primary and alternate facility recycling monitors to the squadron commander for appointment.
- Maintaining a current/updated listing of all facility recycling monitors within their squadron.
- Squadron recycling monitors may act as the facility recycling monitor for the facility in which they work, at the discretion of the squadron commander, in which case they will assume the responsibilities as outlined within this instruction.
- Collecting facility recycling monitor monthly reports and submitting copies to the group UEC by the fifth day of each month.

7.9 FACILITY RECYCLING MONITORS

Facility recycling monitors are responsible for:

- Maintaining knowledge of the following recycling information, as a minimum.
 - Scheduled pickup dates and times for recyclables within assigned facility/facilities. This information is maintained on the ICED program. The cardboard recycling schedule is located at

[\\Cesfs1\enviro\RECYCLING & SOLID WASTE\SHARED_RECYCLING\RECYCLING_SCHEDULE_\(CARDBOARD\).PDF](\\Cesfs1\enviro\RECYCLING & SOLID WASTE\SHARED_RECYCLING\RECYCLING_SCHEDULE_(CARDBOARD).PDF)

- Implementing measures/programs within responsible facility/spaces to effectively carry out the base-wide recycling program requirements.
- Ensuring all employees participate in the recycling program.
- Distributing wing/group/squadron/building recycling policies and procedures.
- Determining facility requirements for recycling receptacles necessary to adequately support the recycling needs. Submitting receptacle requirements to the QRPM.
- Ensuring adequate and clearly identified collection points are provided within each area.
- As applicable, ensuring all recyclable waste is source separated into the following categories:
 - Tin cans;
 - Aluminum cans;
 - High-grade paper;
 - Newspaper/Magazines/Phone directories;
 - Cardboard;
 - Plastics (1 and 2 only);
 - All clear/brown/green glass bottles (no mirrors); and
 - Scrap metal.
- Periodically ensuring the recoverable products are free of contaminants.
- Conducting weekly random inspections of individual trash receptacles within areas of control ensure containers are free of recyclable materials. Submit areas of concern through the squadron recycling monitor, group UEC, and/or responsible squadron commander no later than the fifth day of each month.
- Ensuring the collection point is maintained regularly to discourage the presence of pests, rodents, and odors.
- Maintaining recycling containers.
- Attending Squadron Recycling Monitor meetings and disseminating information from meeting to unit members.

7.10 RECYCLING CENTER STAFF

The RC staff report directly to the RC manager and are responsible for:

- Collecting recyclables from MFH, installation facilities, and other locations on base for processing at the RC;
- Operating forklifts, vehicles, and processing machinery;
- Sorting and preparing recyclable materials for processing, storage, and transport;

- Performing operator maintenance and inspections on all vehicles, forklifts, and equipment;
- Providing assistance and guidance to customers as to the proper preparation and guidelines for recyclable materials;
- Assisting facility recycling monitors in determining container size, type, and collection frequency;
- Adhering to all policies regarding the handling of secure, official use only, and Privacy Act documents, attending security briefings on topics such as protection of classified documents, copying or discussing classified information, and security items relating to COMSEC, OPSEC, or EEFIs; and
- Assisting the RC manager as necessary.

7.11 DEFENSE REUTILIZATION AND MARKETING OFFICE

The base Defense Reutilization and Marketing Office (DRMO) will perform the following:

- Provide assistance and disposal service to DoD components and other authorized customers;
- Promote and ensure maximum conservation of strategic and critical materials and precious metals;
- Provide screening of property to promote the maximum reuse, transfer, or donation (RTD) of excess, surplus, and foreign excess personal property;
- Process authorized RTD requests;
- Perform market research to determine market potential of property available for sale and to optimize monetary return to the Government for property sold;
- Coordinate with the Defense Reutilization and Marketing Service (DRMS) to promote effective marketing techniques in the sale of property;
- Prepare and submit listing of property for sale and recommend the method of sale, when pertinent. Recommend special conditions for unusual requirements or restrictions for inclusion in the sale, as applicable;
- Conduct sales of property, as authorized;
- Maintain and provide records of quantity and types of material sold to the QRPM;
- Transfer monies generated from the sales of recyclable items to the base QRP account, based on accounting codes maintained on DD Form 1348-1, "Disposal Turn-in Document," at least quarterly; and
- Develop service and sales contracts for materials received to be recycled.

7.12 TENANT ORGANIZATIONS

Air Force policy dictates installations shall have a single, integrated QRP. This means tenants such as, but not limited to, the 80th Flying Training Wing, AAFES, and DECA, must participate in the installation QRP. Non-appropriated funds activities, AAFES activities, and commissaries are permitted to sell their recyclables outside the QRP and retain the proceeds. These organizations may choose to participate in the installation QRP. If these organizations choose to have the QRP manage the handling and disposition of recyclable materials, the QRP may recover the cost of recycling from the proceeds derived from those participants. Regardless, all organizations at an installation must provide data on recycling and solid waste generation to the QRPM. This requirement allows the QRPM to calculate performance on the DoD Non-Hazardous Solid Waste Measure of Merit for all activities on installation. This requirement may need to be included in memoranda of agreement and interservice support agreements.

8.0 RECORDS MANAGEMENT

The Air Force requires all QRPs to maintain accurate records of all transactions to account for expenses and proceeds. Proceeds earned through the QRP must first account for all operating expenses prior to using any of the proceeds for additional projects. Good record-keeping also assists managers when conducting a market analysis and management of the recycling program operations.

8.1 SALES RECORDS

Direct sales and DRMO sales of recyclable commodities require item description, weight certificates, shipment receipts, sale prices, payment dates, cashier's records, deposit records, and check copies. Records of direct and DRMO sales should be maintained on a database containing transaction control numbers, sales date, item description, sales price, buyer's name, payment due date, and payment date. Tracking the sales of the recyclables ensures payment is received, and managers can analyze the time between turn-in and payment for recyclables.

All DRMO sales require that a DD Form 1348-1, "Disposal Turn-in Document," and an SF 1080, "Voucher for Transfers Between Appropriations and/or Funds," be completed for each homogeneous material. The form should contain the base QRP account number, base code, identify the appropriate program, and list material code, weight, and date of turn-in. This form documents recyclable item turn-in to the DRMO for sale and ensures the funds generated from items sold are deposited to the correct account. If the information is incomplete or incorrect, the funds will be deposited to the general account of the Treasury, not to the base QRP account established by Sheppard AFB.

8.2 PROCEEDS

Checks for material proceeds should be made payable to the U.S. Treasury and not the base QRP. Checks received by the QRP or RC manager for direct sales or DRMO sales should be submitted with a Funds Transfer Document to the base finance office for deposit into the QRP account (F3875). Copies of checks should be made and kept with sales records, and payment received dates should be recorded in the QRP database.

8.3 EXPENSE RECORDS

The QRPM and RC manager will maintain records pertaining to operational costs, including the purchase of equipment, maintenance, program operation and expansion, labor costs, training, publicity, and overhead for the processing of recyclable materials.

8.4 ADDITIONAL RECORDS

Aside from recyclable sales receipts and QRP expense receipts, the following records should be kept:

- Business Plan;
- Personnel training records;
- Prior audit and internal review reports;
- Management reviews;
- Management controls (to prevent the sale of excluded items);
- Cost benefit analysis;
- Minutes from Solid Waste Working Group and P2 meetings; and
- List of recyclable buyers.

8.5 RECORDS RETENTION

Financial records should be maintained for 3 years, and QRP business plans and documents discussing major decisions should be retained for the life of the program (U.S. Air Force 1994). Records involving the direct sale of hazardous materials, such as lead-acid batteries, should be maintained indefinitely (U.S. Air Force 1994). Records exceeding the 3-year mark should be archived and unnecessary documents discarded.

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APPENDIX A RECYCLING COLLECTION SCHEDULE

Building	Commodities	Pick Up Days	Location of Service
3	OCC, ONC, P, MAG	Tuesday	Outside
5	OCC, ONC, P, MAG	Tuesday	Outside
100	OCC, ONC, P, MAG	Tuesday	Outside
120	OCC, ONC, P, MAG	Tuesday	Outside
195	OCC, ONC, P, MAG	Tuesday	Outside
237	OCC, ONC, P, MAG	Tuesday	Outside
239	OCC, ONC, P, MAG	Tuesday	Outside
240	OCC, ONC, P, MAG	Tuesday	Outside
312	OCC, ONC, P, MAG	Tuesday	Outside
315	OCC, ONC, P, MAG	Tuesday	Outside
316	OCC, ONC, P, MAG	Tuesday	Outside
317	OCC, ONC, P, MAG	Tuesday	Outside
318	OCC, ONC, P, MAG	Tuesday	Outside
331	OCC, ONC, P, MAG	Tuesday	Outside
332	OCC, ONC, P, MAG	Tuesday	Outside
373	OCC, ONC, P, MAG	Tuesday	Outside
384	OCC, ONC, P, MAG	Tuesday	Outside
400	OCC, ONC, P, MAG	Tuesday	Outside
402	OCC, ONC, P, MAG	Monday	Inside
430	OCC, ONC, P, MAG	Tuesday	Outside
450	OCC, ONC, P, MAG	Tuesday	Outside
516	OCC, ONC, P, MAG	Thursday	Outside
526	OCC, ONC, P, MAG	Thursday	Outside
531	OCC, ONC, P, MAG	Thursday	Outside
551	OCC, ONC, P, MAG	Tuesday, Wednesday	Outside
558	OCC, ONC, P, MAG	Thursday	Inside
596	OCC, ONC, P, MAG	Thursday	Outside
638	OCC, ONC, P, MAG	Thursday	Outside
634	OCC, ONC, P, MAG	Thursday	Outside
649	OCC, ONC, P, MAG, Glass	On Call	Inside
699	OCC, ONC, P, MAG	Thursday	Outside
716	OCC, ONC, P, MAG	Thursday	Outside
726	OCC, ONC, P, MAG	Thursday	Outside
776	OCC, ONC, P, MAG	Thursday	Outside
796	OCC, ONC, P, MAG	Thursday	Outside
809	OCC, ONC, P, MAG	Thursday	Outside
810	OCC, ONC, P, MAG	Thursday	Outside

Building	Commodities	Pick Up Days	Location of Service
811	OCC, ONC, P, MAG	Tuesday	Outside
825	OCC, ONC, P, MAG	Thursday	Outside
832	OCC, ONC, P, MAG	Thursday	Outside
843	OCC, ONC, P, MAG	Thursday	Outside
845	OCC, ONC, P, MAG	Thursday	Outside
920	OCC, ONC, P, MAG	Thursday	Inside
922	OCC, ONC, P, MAG	Thursday	Outside
952	OCC, ONC, P, MAG	Thursday	Outside
960	OCC, ONC, P, MAG	Thursday	Outside
961	OCC, ONC, P, MAG	Thursday	Outside
962	OCC, ONC, P, MAG	Thursday	Outside
980	OCC, ONC, P, MAG	Thursday	Outside
981	OCC, ONC, P, MAG	Thursday	Outside
982	OCC, ONC, P, MAG	Thursday	Outside
992	OCC, ONC, P, MAG	Thursday	Outside
996	OCC, ONC, P, MAG	Thursday	Outside
1003	OCC, ONC, P, MAG	Thursday	Outside
1010	OCC, ONC, P, MAG	Thursday	Outside
1012	OCC, ONC, P, MAG	Thursday	Outside
1020	OCC, ONC, P, MAG	Thursday	Inside
1025	OCC, ONC, P, MAG	Wednesday	Inside
1040	OCC, ONC, P, MAG	Thursday	Outside
1045	OCC, ONC, P, MAG	Wednesday	Outside
1060	OCC, ONC, P, MAG	Thursday	Outside
1080	OCC, ONC, P, MAG	Thursday	Outside
1090	OCC, ONC, P, MAG	Thursday	Outside
1093	OCC, ONC, P, MAG	Thursday	Outside
1095	OCC, ONC, P, MAG	Thursday	Outside
1121	Paper	Thursday	Inside
1200	OCC, ONC, P, MAG	Tuesday	Inside
1214	OCC, ONC, P, MAG	Monday	Inside
1216	OCC, ONC, P, MAG	Tuesday	Outside
1360	OCC, ONC, P, MAG	Thursday	Inside
1400	OCC, ONC, P, MAG	Tuesday	Outside
1402	OCC, ONC, P, MAG	Tuesday	Inside
1403	OCC, ONC, P, MAG	Tuesday	Inside
1404	OCC, ONC, P, MAG	Tuesday	Inside
1405	OCC, ONC, P, MAG	Tuesday	Inside

Building	Commodities	Pick Up Days	Location of Service
1600	OCC, ONC, P, MAG	Tuesday	Inside
1624	OCC, ONC, P, MAG	Tuesday	Outside
1638	OCC, ONC, P, MAG	Tuesday	Outside
1658	OCC, ONC, P, MAG	Tuesday	Outside
1662	OCC, ONC, P, MAG	Tuesday	Outside
1664	OCC, ONC, P, MAG	Tuesday	Outside
1712	OCC, ONC, P, MAG	Thursday	Inside
1719	OCC, ONC, P, MAG	Thursday	Inside
1900	OCC, ONC, P, MAG, PL	Wednesday	Outside
1919	OCC, ONC, P, MAG	Wednesday	Outside
1921	OCC, ONC, P, MAG	Wednesday	Outside
1923	OCC, ONC, P, MAG	Wednesday	Outside
1927	OCC, ONC, P, MAG	Wednesday	Outside
1950	OCC, ONC, P, MAG	Wednesday	Inside
1954	OCC, ONC, P, MAG	Wednesday	Outside
1956	OCC, ONC, P, MAG	Wednesday	Inside
1959	OCC, ONC, P, MAG	Wednesday	Outside
1960	OCC, ONC, P, MAG	Wednesday	Outside
2001	OCC, ONC, P, MAG	Wednesday	Outside
2002	OCC, ONC, P, MAG	Wednesday	Outside
2010	OCC, ONC, P, MAG	Wednesday	Outside
2013	OCC, ONC, P, MAG	Wednesday	Outside
2017	OCC, ONC, P, MAG	Wednesday	Outside
2030	OCC, ONC, P, MAG	Wednesday	Outside
2080	OCC, ONC, P, MAG	Wednesday	Outside
2111	OCC, ONC, P, MAG	Wednesday	Outside
2113	OCC, ONC, P, MAG	Wednesday	Outside
2116	OCC, ONC, P, MAG	Wednesday	Outside
2117	OCC, ONC, P, MAG	Wednesday	Outside
2118	OCC, ONC, P, MAG	Wednesday	Outside
2130	OCC, ONC, P, MAG	Wednesday	Outside
2133	OCC, ONC, P, MAG	Wednesday	Outside
2204	OCC, ONC, P, MAG	Wednesday	Outside
2208	OCC, ONC, P, MAG	Wednesday	Outside
2320	OCC, ONC, P, M, GL, PL	Wednesday	Inside
2322	OCC, ONC, P, MAG	Wednesday	Outside
2325	OCC, ONC, P, MAG	Wednesday	Outside
2330	OCC, ONC, P, MAG	Wednesday	Outside

Building	Commodities	Pick Up Days	Location of Service
2331	OCC, ONC, P, MAG	Wednesday	Outside
2333	OCC, ONC, P, MAG	Wednesday	Outside
2384	OCC, ONC, P, MAG	Wednesday	Outside
2406	OCC, ONC, P, MAG	Wednesday	Outside
2558	OCC, ONC, P, MAG	Wednesday	Outside
2560	OCC, ONC, P, MAG	Wednesday	Outside
4475	OCC, ONC, P, MAG	Tuesday	Outside
WHSE 24	Paper	On Call	Inside
WHSE 25	Paper	On Call	Inside
	(Pallet of file boxes)		
SAFB EL SCH	OCC, ONC, P, MAG	Tuesday	Inside

Note: Contractor will pick up all plastic bags of aluminum cans, plastic, shredded paper, and glass as they collect at each facility unless otherwise scheduled. Contractor will pick up all unscheduled bulk cardboard within 24 hours of notification. Contractor will collect all unscheduled pickups, i.e., publication and student handouts, within 72 hours of notification.

Legend: GL – Glass; OCC – Cardboard; ONC – Newsprint; P – Paper; MAG – Magazines; PI – Plastics
Other items will be collected as needs change. These are general.

APPENDIX B MARKET AND EQUIPMENT PURCHASE ANALYSIS TOOLS

Market Analysis Data Collection Worksheet

Vendor Name: _____

Address: _____

Phone Number: _____

Contact Name: _____

Recyclables Collected	Current Market Price	Historical Prices (6 months)	Quality Requirement	Contaminants

Packaging requirements: _____

Minimum weight accepted: _____

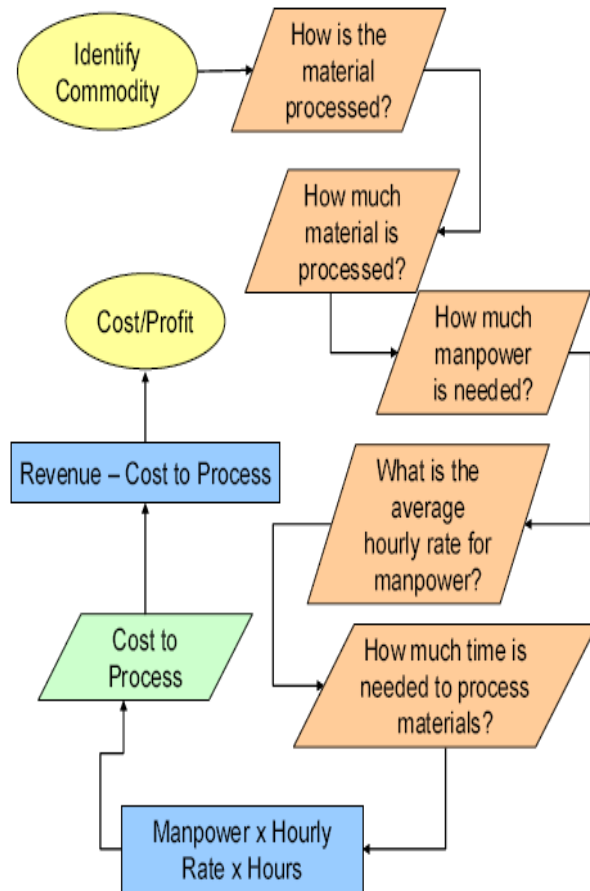
Transportation costs: _____

Equipment available from vendor: _____

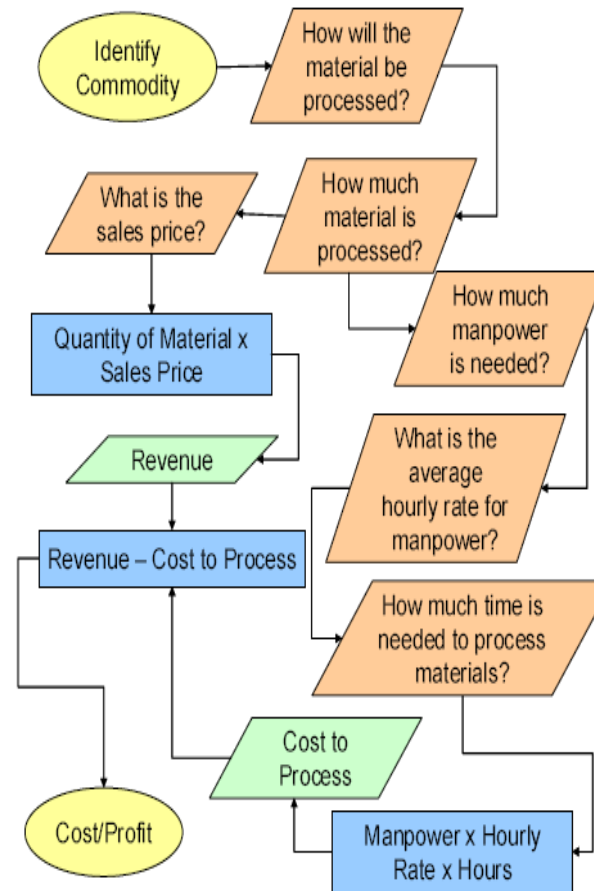
Notes and additional information: _____

Equipment Purchase Worksheet		82 CES/CEV Qualified Recycling Program Sheppard AFB, TX	
		Step 1 Current Operations	Step 2 Proposed Operations
a. How is/will the material be processed?			Type of Process
Is the material processed manually, mechanically, or not at all?			
b. How much material is/will be processed?			lbs
Determine the weight of the material processed.			
c. How much manpower is needed?			Full Time Employees
How many people are needed to process the material?			
d. What is the average hourly rate per person?			\$/hour
Determine the average hourly pay rate for the employees needed to process the material.			
e. How much time to process?			hours
How many hours does it take to process material with the number of people specified in line c?			
f. What is the cost to process?			\$
Calculate the cost to process by multiplying lines c, d, and e. (Cost to Process=line c x line d x line e)			
g. What is the sales price?			\$/lb
Step 1 sales prices are based on past sales prices. A review of past payments received divided by the total quantity sold will provide the price per unit. To determine the sales price in Step 2, contact additional vendors to identify other prices.			
h. How much revenue is/will be generated per shipment?			\$
A shipment is defined as the amount listed in line b. To calculate revenue multiply lines b and g. (Revenue=line b x line g)			
i. Frequency of process?			per year
Frequency of process is defined as the number of times the amount of material listed in line b will be generated and sold.			
j. What is the Cost or Profit?			\$
Cost or Profit is determined by subtracting the costs to process, line f, from the revenues generated, line h. (Cost or Profit=line h - line f)			
k. Net difference between current and proposed operations?			\$
The net difference is calculated by subtracting the results on line j--Step 2 less Step 1. If the result is positive, continue completing worksheet. If the result is negative, current operations are more economical--stop here. (Net difference = Step 2 [line j] -Step 1 [line j])			
l. What is the Net Annual Revenue?			\$
Net revenues are calculated by multiplying lines j and i from Step 2. (Net Annual Revenue = line j x line i)			
Equipment Pay Back			
m. What type of equipment will be purchased?			
n. How much does the equipment cost?			\$
o. Equipment Pay Back			years
Equipment pay back refers to the amount of time it will take to pay for the cost of the equipment. Equipment pay back is calculated by dividing the cost of the equipment, line n, by the annual revenue, line l. (Equipment Pay Back = line n / line l)			

Step 1—Current Operations



Step 2—Proposed Operation



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APPENDIX C ECONOMIC ANALYSIS FOR QRP OPERATIONS



**DEPARTMENT OF THE AIR FORCE
AIR EDUCATION AND TRAINING COMMAND**

6 April 2004

MEMORANDUM FOR 82 CES/CEVP

Attn: Mr. Richard Milhollon

FROM: 82 CPTS/FMA

SUBJECT: Cost Benefit Analysis for Sheppard AFB Qualified Recycling Program

1. We have completed the cost benefit analyses you requested. The results favored reverting the operation back to the government alternative. Our computations are based on the information you provided us as well as information gathered from our cost tables. If you have any other pertinent data that we should have included, please provide it to us and we will be glad to rework the analysis
2. If you have any questions or concerns, please call my POC, Mr. Peoples at extension 6-5329.

MICHAEL L. HAIRE, 1Lt., USAF
Flight Commander, Financial Analysis

Attachments:

1. Discussions
2. Format A- Status Quo
3. Format A- Revert Back to Govt. (3)
4. Format A – Revert Back to Govt. (4)
5. Format A- Revert Back to Govt. (5)
6. Format A- Revised Contract
7. Format A- Cost Comparisons
8. Format B- Benefit and Benefit Cost Ratio Analysis

**Cost Benefit Analysis for Sheppard AFB
Qualified Recycling Program
21 May 2004**

Cost Benefit Analysis for Sheppard AFB Qualified Recycling Program

I. OBJECTIVE: To determine the most efficient means of managing a Qualified Recycling Program (QRP) for the 82d Civil Engineer Squadron, Environmental Flight, Sheppard AFB, Texas.

II. BACKGROUND: The Civil Engineer Squadron, requested a Staff Assistance Visit (SAV) to examine two areas: the high cost and low return on investment recycling program, and the 17 percent solid waste diversion rate. Based on the results of the SAV the 82 CES, Environmental Flight, requested we the Financial Analysis Flight, complete a Cost Benefit Analysis (CBA) to determine the most efficient means of managing a QRP.

III. HISTORY: Sheppard initiated a Recycling Program in the early 90's through the Non-Appropriated Funds office, 82d Services Squadron (82 SVS). Although the 82 SVS recycling program grew steadily until 1993, its primary objective was to generate revenue for SAFB's Morale, Welfare and Recreation fund, not to reduce the base's solid waste. Recognizing Services was not operating recycling at a profit, combined with the increasing challenges in meeting the goal to reduce total solid waste led to changes in the base's recycling operations. Specifically, the emphasis shifted from the need to operate at a profit to a need of maximizing the reduction of total solid waste disposal through recycling initiatives.

In-house or the government operation grew over the next six years, as did SAFB. The population of SAFB practically doubled from 1996 to 1998. The Unit Manning Document for 82 CES did not allow nor provide any permanent positions to run the QRP. Manning consisted of the QRP manager, a member of the 82 CES/CEV staff, and six-overhire wage grade civilian positions. The QRP did not have any permanent vehicle authorizations as well. A three-year temporary authorization was given for three temporary General Service Administration leased vehicles and one local lease authorization for a 6,000-pound forklift. When 82 CES took over management of the program in 1993, several pieces of equipment, i.e., balers, can/bottle crusher, trailers, etc., were turned over to the QRP. Due to concerns of privatization and the A-76 study/Most Efficient Organization in 1999, a management decision was made in Fall 1999 to abolish the in-house QRP and out source, i.e., contract it out.

In March 2000, a contract was awarded to Urrutia Incorporated to conduct the recycling operations for SAFB. In addition, the contract stipulated the contractor could keep the proceeds/profits made from brokering the recycled material. Since the inception of the contract the recycling cost trends have declined each year.

Another factor indicating a need for a QRP review is SAFB's solid waste diversion rates. SAFB's solid waste diversion rates were beginning to increase slowly from 1998 to 1999. However, starting in 2000, when QRP was taken over by a contractor, the diversion rates decreased steadily. With the current diversion rate at the lowest in six years, Headquarters Air Education and Training Command (AETC) and SAFB's Environmental Protection Committee indicated it was time for a change. (NOTE: The diversion rate includes the following recycled items: paper, cardboard, aluminum cans, glass, plastic, tin cans, cooking grease, scrap metal, pallets, food waste, and compost).

The primary goal of SAFB's solid waste program is to increase the installation's diversion rate; however, consistency in achieving financial profitability is a difficult hurdle. Certainly not all activities performed by the QRP will be profitable. Current contract costs are over \$220K. If average proceeds were \$50K,

then the contractor stands to profit approximately \$270K in FY04. Of the \$220K, 82 CES pays for approximately \$108K (49%, included in the budget each year); Military Family Housing reimburses \$94K (43%); the 80th Flying Training Wing and 82d Medical Group reimburses for \$9K (4%) each.

IV. ASSUMPTIONS:

1. The recycling facility will be located on the base.
2. Funding for equipment will be obtained through environmental funds and are already programmed for Sheppard's QRP.
3. Existing equipment will be used and additional funding for equipment will come from environmental funds already programmed for Sheppard's QRP, and existing QRP account.
4. The funds for the contractor cost will be available as required.
5. The discount rate used for the analysis is correct for the intended purpose.
6. The Cost Benefit Ratio (CBR) method of comparison is accurate for the purpose of the analysis.
7. The lifecycle used for this project is 10 years due to the fact the equipment life span is approximately 10 years, based on statistical analysis using the mean, median and mode.
8. As personnel increase so does productivity and increased recycling of materials.

V. BENEFIT DEFINITIONS:

A. Productivity. This benefit relates to which alternative will lead to increased performance in the QRP.

B. Effectiveness. This benefit relates to which alternative will lead to better mission accomplishment in the performance of QRP.

C. Opportunity Cost. This benefit relates to which alternative generates savings allowing these funds to be reinvested in the QRP or diverted to other mission priorities.

D. Improved Diversion Rate. This benefit relates to which alternative has a greater ability of achieving HQ AETC goal of recycling more items such as: paper, cardboard, aluminum cans, glass, plastic, tin cans, cooking grease, scrap metal, pallets, food waste, and compost).

E. Management. This benefit relates to which alternative would allow for flexibility and minimal management.

VI. ALTERNATIVES:

A. Status Quo. This alternative is based on current operations. The cost for the contract is \$220K annually. There is a cost avoidance of \$104K associated with this alternative due to materials being recycled on base, versus being sent to landfills. This alternative has a 10-year life-cycle cost of \$2.2M and a total discounted project cost of \$984K. The Uniform Annual Cost (UAC) for this option is \$116K annually and \$1.2M for the 10-year life cycle.

The benefit values for this alternative are; 3.0 for productivity, 3.8 for effectiveness, 1.2 for opportunity cost, 1.0 for improved diversion rate, and .8 for management. The total benefit point value for this alternative is 9.8. Thus, this alternative has a CBR of \$125K. This means for every benefit point derived from this alternative the government will expend \$125K annually. This alternative is the least efficient in terms of cost and benefits derived and does not meet the objective of determining the most efficient means of managing a QRP.

B. Option II, Revised Operations. This alternative is based on reverting the operation back to the government. Under this alternative, the government would upgrade a facility to bring the QRP function back in-house. The government would hire three contracted personnel through a Department of Treasury manpower contract (Fed Source). The government would operate the QRP, therefore all costs and revenues would belong to the government. There are several costs associated with this alternative; they include, a facility upgrade @ \$206K, investment equipment @ \$180K, the annual contract cost for personnel @ \$122K, vehicle rental fees @ \$24K, utility cost @ \$8K and equipment and supplies totaling \$11K. The total cost for this alternative is \$165K annually. The predicted annual revenue earnings for this alternative are \$45K. In addition there is a higher cost avoidance of \$133K associated with this alternative due to an increase in personnel and more materials being recycled on base, versus being sent to landfills. This alternative has a 10-year life-cycle cost of \$2M and a total discounted project cost of \$278K and a UAC of \$33K.

The benefit values for this alternative are; 3.2 for productivity, 4.0 for effectiveness, 2.3 for opportunity cost, 1.5 for improved diversion rate, and .8 for management. The total benefit point value for this alternative is 11.8. Thus, this alternative has a CBR of \$28K. This means for every benefit point derived from this alternative the government will expend \$28K annually. This alternative is the second most effective in terms of cost and benefits derived but does not meet the overall objective of determining the most efficient means of managing a QRP.

C. Option III, Revised Operations with 4 members. This alternative is based on reverting the operation back to the government. Under this alternative, four contracted personnel would be hired through a Department of Treasury manpower contract (Fed Source). The government would operate the QRP, therefore all costs and revenues would belong to the government. There are several costs associated with this alternative; they include, a facility upgrade @ \$206K, investment equipment @ \$180K, the annual contract cost for personnel @ \$130K, vehicle rental fees @ \$24K, equipment and supplies \$11K and utilities totaling \$8.2K. The total cost for this alternative is \$173K annually. The predicted annual revenue earnings for this alternative are \$51K. In addition, there is a cost avoidance of \$143K associated with this alternative due to an increase in personnel and more materials being recycled on base, versus being sent to landfills. This alternative has a 10-year life-cycle cost of \$2.1M and a total discounted project cost of \$210K and a UAC of \$25K.

The benefit values for this alternative are; 3.4 for productivity, 4.3 for effectiveness, 2.9 for opportunity cost, 1.6 for improved diversion rate, and .8 for management. The total benefit point value for this alternative is 12.9. Thus, this alternative has a CBR of \$19K. This means for every benefit derived from this alternative the government will expend \$19K annually. This alternative is the most effective in terms of cost and benefits and meets the overall objective of determining the most efficient means of managing a QRP.

D. Option IV Revised Operations with 5 members. This alternative is based on reverting the operation back to the government. Under this alternative, five contracted personnel would be hired through a Department of Treasury manpower contract (Fed Source). The government would operate the QRP therefore all costs and revenues would belong to the government. There are several cost associated with this alternative; they include, facility upgrade \$206K, investment equipment @ \$180K, annual contract cost for personnel @ \$152K, vehicle rental fees @ \$24K, equipment and supplies @ \$11K and utilities totaling \$8K. The total cost for this alternative is \$195K annually. The predicted revenue earnings for this alternative are \$57K. In addition there is a cost avoidance of \$153K associated with this alternative due to an increase in personnel and more materials being recycled on base, versus being sent to landfills.

This alternative has a 10-year life-cycle cost of \$2.3M and a total discounted project cost of \$261K and a UAC of \$31K.

The benefit values for this alternative are; 3.6 for productivity, 4.5 for effectiveness, 2.4 for opportunity cost, 1.7 for improved diversion rate, and .8 for management. The total benefit point value for this alternative is 13.0. Thus, this alternative has a CBR of \$24K. This means for every benefit derived from this alternative the government will expend \$24K annually. This alternative has the highest benefit values but is the third most effective in terms of cost and benefits derived. This alternative does not meet the overall objective of determining the most efficient means of managing a QRP.

E. Option V Revise Current Contract. This alternative is based on rewriting the contract in order to help meet the diversion standards and capture revenues generated through the QRP. The contractor would operate the QRP and turnover all revenues generated to the government. However, in this alternative contractor costs are higher to offset the lost revenues generated through the QRP. In this alternative, we will implement a new contract for \$277K. The predicted annual revenue earnings for this alternative are \$51K. In addition there is a cost avoidance of \$104K associated with this alternative due to an increase in personnel and more materials being recycled on base, versus being sent to landfills. This alternative has a 10-year life-cycle cost of \$2.8M and a discounted total project cost of \$1.0M and a UAC of \$122K.

The benefit values for this alternative are; 3.4 for productivity, 4.3 for effectiveness, 0.6 for opportunity cost, 1.6 for improved diversion rate, and .8 for management. The total benefit point value for this alternative is 10.7. Thus, this alternative has a CBR of \$115K. This means for every benefit point derived from this alternative the government will expend \$115K annually. This alternative has the second lowest benefit values and is the least effective in terms of cost and benefits derived. This alternative is ranked second to last and does not meet the overall objective of determining the most efficient means of managing a QRP.

VII. COMPARISON OF COSTS:	BENEFIT VALUE	UAC	CBR
Option I - Status Quo	9.8	\$116K	\$119K
Option II – Revert Back to Govt. (3)	11.8	\$ 33K	\$ 28K
Option III – Revert Back to Govt. (4)	12.9	\$ 25K	\$ 19K
Option IV – Revert Back to Govt. (5)	13.0	\$ 31K	\$ 24K
Option V – Revise Contract	10.7	\$122K	\$115K

VIII. CONCLUSIONS:

Comparison of the alternatives indicate that Option III, Revert Back to the Government, has the a benefit value of 12.9 and a UAC, and CBR of \$25K and \$19K respectively. Based on the CBR, for every benefit point derived from this alternative the government will expend \$19K annually. This alternative is the most effective in terms of cost and benefits and meets the overall objective of determining the most efficient means of managing a QRP. Option V, Status Quo, is the least efficient in terms of cost and benefits because, for every benefit point derived from this alternative the government will expend \$119K.

IX. RECOMMENDATION

Recommend selection of Option III, Revert Back to Government, with 4 member staff. Option III is the most cost effective with a UAC and CBR of \$25K and \$19K respectively.

	FORMAT A - STATUS QUO - CONTRACT						
1. Submitting DOD Component:	USAF						
2. Date of Submission:	21-May-04						
3. Project Title:	Status Quo Option I						
4. Description of Project Objective:	Provide for Qualified Recycling Program at Sheppard AFB						
5a. Proposed Alternative:	Contract						
6a. Economic Life:	10 Years						
7. Discount Rate:	3.5% (Real)						
	NONRECURRING	RECURRING	RECURRING			DISCOUNTED	CUMULATIVE
	COST	COST OF	COST AVOIDANCE	ANNUAL	DISCOUNT	ANNUAL	DISCOUNTED
PROJECT YEAR	INVESTMENT	OPERATIONS	REVENUES	COST	FACTOR	COST	COST
0	\$0	\$0		\$0	1.0000	\$0	\$0
1	\$0	\$220,343	\$104,000	\$116,343	0.9829	\$114,354	\$114,354
2	\$0	\$220,343	\$104,000	\$116,343	0.9497	\$110,491	\$224,844
3	\$0	\$220,343	\$104,000	\$116,343	0.9176	\$106,756	\$331,601
4	\$0	\$220,343	\$104,000	\$116,343	0.8866	\$103,150	\$434,751
5	\$0	\$220,343	\$104,000	\$116,343	0.8566	\$99,659	\$534,410
6	\$0	\$220,343	\$104,000	\$116,343	0.8276	\$96,285	\$630,695
7	\$0	\$220,343	\$104,000	\$116,343	0.7996	\$93,028	\$723,723
8	\$0	\$220,343	\$104,000	\$116,343	0.7726	\$89,887	\$813,610
9	\$0	\$220,343	\$104,000	\$116,343	0.7465	\$86,850	\$900,460
10	\$0	\$220,343	\$104,000	\$116,343	0.7212	\$83,907	\$984,366
TOTALS	\$0	\$2,203,430	\$1,040,000	\$1,163,430	8.4609	\$984,366	
Total Project Cost, Discounted	\$984,366						
Uniform Annual Cost (UAC), w/o Terminal Value	\$116,343						
Less Terminal Value, Discounted	\$0						
Net Total Project Cost, Discounted	\$984,366						
Uniform Annual Cost, w/ Terminal Value	\$116,343						
Computations & Methodology:							
Non-Recurring Costs:							
Total Non-Recurring Costs:	\$0						
Recurring Costs:							
Annual Contract Cost	\$220,343						
Total Recurring Costs:	\$220,343						
Annual Cost Avoidance	-\$104,000						
Total Expense/Savings	\$116,343						
Notes:							

FORMAT A - OPTION II, REVERT BACK TO THE GOVT - 3 PERSONNEL							
1. Submitting DOD Component:	USAF						
2. Date of Submission:	21-May-04						
3. Project Title:	Option II Revised Contract with 3 Personnel						
4. Description of Project Objective:	Provide for Qualified Recycling Program at Sheppard AFB						
5a. Proposed Alternative:	Revert back to Govt Operations						
6a. Economic Life:	10 Years						
7. Discount Rate:	3.5% (Real)						
	NONRECURRING COST	RECURRING COST OF OPERATIONS	RECURRING COST AVOIDANCE REVENUES	ANNUAL COST	DISCOUNT FACTOR	DISCOUNTED ANNUAL COST	CUMULATIVE DISCOUNTED COST
PROJECT YEAR	INVESTMENT						
0	\$385,800	\$0		\$385,800	1.0000	\$385,800	\$385,800
1	\$0	\$165,225	\$178,000	-\$12,775	0.9829	-\$12,557	\$373,243
2	\$0	\$165,225	\$178,000	-\$12,775	0.9497	-\$12,132	\$361,111
3	\$0	\$165,225	\$178,000	-\$12,775	0.9176	-\$11,722	\$349,389
4	\$0	\$165,225	\$178,000	-\$12,775	0.8866	-\$11,326	\$338,062
5	\$0	\$165,225	\$178,000	-\$12,775	0.8566	-\$10,943	\$327,119
6	\$0	\$165,225	\$178,000	-\$12,775	0.8276	-\$10,573	\$316,547
7	\$0	\$165,225	\$178,000	-\$12,775	0.7996	-\$10,215	\$306,332
8	\$0	\$165,225	\$178,000	-\$12,775	0.7726	-\$9,870	\$296,462
9	\$0	\$165,225	\$178,000	-\$12,775	0.7465	-\$9,537	\$286,925
10	\$0	\$165,225	\$178,000	-\$12,775	0.7212	-\$9,213	\$277,712
	\$385,800	\$1,652,250	\$1,780,000	\$258,050	8.4609	\$277,712	
Total Project Cost, Discounted	\$277,712						
Uniform Annual Cost (UAC), w/o Terminal Value	\$32,823						
Less Terminal Value, Discounted	\$0						
Net Total Project Cost, Discounted	\$277,712						
Uniform Annual Cost, w/ Terminal Value	\$32,823						
Computations & Methodology:							
Non-Recurring Costs:							
Building 2140 Upgrade	\$205,800						
Investment Equipment	\$180,000						
Total Non-Recurring Costs:	\$385,800						
Recurring Costs:							
Annual Contract Cost	\$122,000						
Vehicle Rental	\$24,000						
Equip Maint/Supplies	\$11,000						
Utility Costs	\$8,225						
Total Recurring Costs:	\$165,225						
Annual Revenues	-\$45,000						
Annual Cost Avoidance	-\$133,000						
Total Revenues/Cost Avoidance	-\$178,000						
Total Expense/Savings	-\$12,775						
Notes:							

FORMAT A - OPTION III, REVERT BACK TO THE GOVT - 4 PERSONNEL							
1. Submitting DOD Component:	USAF						
2. Date of Submission:	21-May-04						
3. Project Title:	Option III Revised Contract with 4 Personnel						
4. Description of Project Objective:	Provide for Qualified Recycling Program at Sheppard AFB						
5a. Proposed Alternative:	Revert back to Govt Operations						
6a. Economic Life:	10 Years						
7. Discount Rate:	3.5% (Real)						
PROJECT YEAR	NONRECURRING COST INVESTMENT	RECURRING COST OF OPERATIONS	RECURRING COST AVOIDANCE REVENUES	ANNUAL COST	DISCOUNT FACTOR	DISCOUNTED ANNUAL COST	CUMULATIVE DISCOUNTED COST
0	\$385,800	\$0		\$385,800	1.0000	\$385,800	\$385,800
1	\$0	\$173,225	\$194,000	-\$20,775	0.9829	-\$20,420	\$365,380
2	\$0	\$173,225	\$194,000	-\$20,775	0.9497	-\$19,730	\$345,650
3	\$0	\$173,225	\$194,000	-\$20,775	0.9176	-\$19,063	\$326,587
4	\$0	\$173,225	\$194,000	-\$20,775	0.8866	-\$18,419	\$308,168
5	\$0	\$173,225	\$194,000	-\$20,775	0.8566	-\$17,796	\$290,372
6	\$0	\$173,225	\$194,000	-\$20,775	0.8276	-\$17,193	\$273,179
7	\$0	\$173,225	\$194,000	-\$20,775	0.7996	-\$16,612	\$256,567
8	\$0	\$173,225	\$194,000	-\$20,775	0.7726	-\$16,051	\$240,516
9	\$0	\$173,225	\$194,000	-\$20,775	0.7465	-\$15,509	\$225,008
10	\$0	\$173,225	\$194,000	-\$20,775	0.7212	-\$14,983	\$210,025
TOTALS	\$385,800	\$1,732,250	\$1,940,000	\$178,050	8.4609	\$210,025	
Total Project Cost, Discounted	\$210,025						
Uniform Annual Cost (UAC), w/o Terminal Value	\$24,823						
Less Terminal Value, Discounted	\$0						
Net Total Project Cost, Discounted	\$210,025						
Uniform Annual Cost, w/ Terminal Value	\$24,823						
Computations & Methodology:							
Non-Recurring Costs:							
Building 2140 Upgrade	\$205,800						
Investment Equipment	\$180,000						
Total Non-Recurring Costs:	\$385,800						
Recurring Costs:							
Annual Contract Cost	\$130,000						
Vehicle Rental	\$24,000						
Equip Maint/Supplies	\$11,000						
Utilities	\$8,225						
Total Recurring Costs:	\$173,225						
Annual Revenues	-\$51,000						
Annual Cost Avoidance	-\$143,000						
Total Revenues/Cost Avoidance	-\$194,000						
Total Expense/Savings	-\$20,775						

FORMAT A - OPTION IV. REVERT BACK TO THE GOVT - 5 PERSONNEL							
1. Submitting DOD Component:	USAF						
2. Date of Submission:	21-May-04						
3. Project Title:	Option IV Revised Contract with 5 Personnel						
4. Description of Project Objective:	Provide for Qualified Recycling Program at Sheppard AFB						
5a. Proposed Alternative:	Revert back to Govt Operations						
6a. Economic Life:	10 Years						
7. Discount Rate:	3.5% (Real)						
	NONRECURRING COST	RECURRING COST OF OPERATIONS	RECURRING COST AVOIDANCE REVENUES	ANNUAL COST	DISCOUNT FACTOR	DISCOUNTED ANNUAL COST	CUMULATIVE DISCOUNTED COST
PROJECT YEAR	INVESTMENT						
0	\$385,800	\$0		\$385,800	1.0000	\$385,800	\$385,800
1	\$0	\$195,225	\$210,000	-\$14,775	0.9829	-\$14,522	\$371,278
2	\$0	\$195,225	\$210,000	-\$14,775	0.9497	-\$14,032	\$357,246
3	\$0	\$195,225	\$210,000	-\$14,775	0.9176	-\$13,558	\$343,688
4	\$0	\$195,225	\$210,000	-\$14,775	0.8866	-\$13,100	\$330,589
5	\$0	\$195,225	\$210,000	-\$14,775	0.8566	-\$12,656	\$317,933
6	\$0	\$195,225	\$210,000	-\$14,775	0.8276	-\$12,228	\$305,705
7	\$0	\$195,225	\$210,000	-\$14,775	0.7996	-\$11,814	\$293,891
8	\$0	\$195,225	\$210,000	-\$14,775	0.7726	-\$11,415	\$282,475
9	\$0	\$195,225	\$210,000	-\$14,775	0.7465	-\$11,030	\$271,446
10	\$0	\$195,225	\$210,000	-\$14,775	0.7212	-\$10,656	\$260,790
TOTALS	\$385,800	\$1,952,250	\$2,100,000	\$238,050	8.4609	\$260,790	
Total Project Cost, Discounted	\$260,790						
Uniform Annual Cost (UAC), w/o Terminal Value	\$30,823						
Less Terminal Value, Discounted	\$0						
Net Total Project Cost, Discounted	\$260,790						
Uniform Annual Cost, w/ Terminal Value	\$30,823						
Computations & Methodology:							
Non-Recurring Costs:							
Building 2140 Upgrade	\$205,800						
Investment Equipment	\$180,000						
Total Non-Recurring Costs:	\$385,800						
Recurring Costs:							
Annual Contract Cost	\$152,000						
Vehicle Rental	\$24,000						
Equip Maint/Supplies	\$11,000						
Utilities	\$8,225						
Total Recurring Costs:	\$195,225						
Annual Revenues	-\$57,000						
Annual Cost Avoidance	-\$153,000						
Total Revenues/Cost Avoidance	-\$210,000						
Total Expense/Savings	-\$14,775						
Notes:							

FORMAT A - OPTION V. REVISED CONTRACT							
1. Submitting DOD Component:	USAF						
2. Date of Submission:	21-May-04						
3. Project Title:	Option V. Revised Contract						
4. Description of Project Objective:	Provide for Qualified Recycling Program at Sheppard AFB						
5a. Proposed Alternative:	REVISED CONTRACT						
6a. Economic Life:	10 Years						
7. Discount Rate:	3.5% (Real)						
PROJECT YEAR	NONRECURRING COST INVESTMENT	RECURRING COST OF OPERATIONS	RECURRING COST AVOIDANCE REVENUES	ANNUAL COST	DISCOUNT FACTOR	DISCOUNTED ANNUAL COST	CUMULATIVE DISCOUNTED COST
0	\$0	\$0		\$0	1.0000	\$0	\$0
1	\$0	\$277,000	\$155,000	\$122,000	0.9829	\$119,914	\$119,914
2	\$0	\$277,000	\$155,000	\$122,000	0.9497	\$115,863	\$235,777
3	\$0	\$277,000	\$155,000	\$122,000	0.9176	\$111,947	\$347,724
4	\$0	\$277,000	\$155,000	\$122,000	0.8866	\$108,165	\$455,890
5	\$0	\$277,000	\$155,000	\$122,000	0.8566	\$104,505	\$560,395
6	\$0	\$277,000	\$155,000	\$122,000	0.8276	\$100,967	\$661,362
7	\$0	\$277,000	\$155,000	\$122,000	0.7996	\$97,551	\$758,913
8	\$0	\$277,000	\$155,000	\$122,000	0.7726	\$94,257	\$853,170
9	\$0	\$277,000	\$155,000	\$122,000	0.7465	\$91,073	\$944,243
10	\$0	\$277,000	\$155,000	\$122,000	0.7212	\$87,986	\$1,032,230
TOTALS	\$0	\$2,770,000	\$1,550,000	#####	8.4609	\$1,032,230	
Total Project Cost, Discounted	\$1,032,230						
Uniform Annual Cost (UAC), w/o Terminal Value	\$122,000						
Less Terminal Value, Discounted	\$0						
Net Total Project Cost, Discounted	\$1,032,230						
Uniform Annual Cost, w/ Terminal Value	\$122,000						
Computations & Methodology:							
Non-Recurring Costs:							
Total Non-Recurring Costs:	\$0						
Recurring Costs:							
Annual Contract Cost	\$277,000						
Vehicle Rental							
Equip Maint/Supplies							
Utilities							
Total Recurring Costs:	\$277,000						
Annual Revenues	-\$51,000						
Annual Cost Avoidance	-\$104,000						
Total Revenues/Cost Avoidance	-\$155,000						
Total Expense/Savings	\$122,000						
Notes:							

COST COMPARISON OF ALTERNATIVES					
1. Submitting DOD Component:	USAF				
2. Date of Submission:	21-May-04				
3. Project Title:	Comparison of Alternatives				
4. Description of Project Objective:	Provide for Qualified Recycling Program at Sheppard AFB				
5a. Present Alternative:	Contract		6a. Economic Life:	7 Years	
5b. Proposed Alternative:	Revert back to In-House		6b. Economic Life:	7 Years	
7. Discount Rate:	3.5% (Real)				
	Status Quo	Option II - Govt	Option III - Govt	Option IV - Govt	Option V - Govt
	Uniform Annual	Uniform Annual	Uniform Annual	Uniform Annual	Uniform Annual
PROJECT YEAR	Cost	Cost	Cost	Cost	Cost
1	\$116,343	\$32,823	\$24,823	\$30,823	\$122,000
2	\$116,343	\$32,823	\$24,823	\$30,823	\$122,000
3	\$116,343	\$32,823	\$24,823	\$30,823	\$122,000
4	\$116,343	\$32,823	\$24,823	\$30,823	\$122,000
5	\$116,343	\$32,823	\$24,823	\$30,823	\$122,000
6	\$116,343	\$32,823	\$24,823	\$30,823	\$122,000
7	\$116,343	\$32,823	\$24,823	\$30,823	\$122,000
8	\$116,343	\$32,823	\$24,823	\$30,823	\$122,000
9	\$116,343	\$32,823	\$24,823	\$30,823	\$122,000
10	\$116,343	\$32,823	\$24,823	\$30,823	\$122,000
TOTALS	1,163,430	328,230	248,230	308,230	1,220,000
Present Value (PV) of New Investment	\$0				
Less PV of Terminal Value of New Investment	\$0				
Net Present Value of New Investment	\$0				
Total PV of Savings	\$0				
Note:					
An SIR of 1.0 is considered the break-even point, where the cumulative annual savings equals the cost of investment.					
An SIR of greater than 1.0 will favor the purchase of an asset, while an SIR of less than 1.0 will favor a lease.					

BENEFIT COST RATIO ANALYSIS						
1. Submitting DOD Component:		USAF				
2. Date of Submission:		21-May-04				
3. Project Title:		Comparison of Alternatives				
4. Description of Project Objective:		Provide for Qualified Recycling Program at Sheppard AFB				
5a. Present Alternative:		Contract		6a. Economic Life:	10 Years	
5b. Proposed Alternative:		Revert back to In-House		6b. Economic Life:	10 Years	
7. Discount Rate:		3.5% (Real)				
		Status Quo	Option II	Option III	Option IV	Option V
		Uniform Annual	Uniform Annual	Uniform Annual	Uniform Annual	Uniform Annual
PROJECT YEAR		Cost	Cost	Cost	Cost	Cost
1		\$116,343	\$32,823	\$24,823	\$30,823	\$122,000
2		\$116,343	\$32,823	\$24,823	\$30,823	\$122,000
3		\$116,343	\$32,823	\$24,823	\$30,823	\$122,000
4		\$116,343	\$32,823	\$24,823	\$30,823	\$122,000
5		\$116,343	\$32,823	\$24,823	\$30,823	\$122,000
6		\$116,343	\$32,823	\$24,823	\$30,823	\$122,000
7		\$116,343	\$32,823	\$24,823	\$30,823	\$122,000
8		\$116,343	\$32,823	\$24,823	\$30,823	\$122,000
9		\$116,343	\$32,823	\$24,823	\$30,823	\$122,000
10		\$116,343	\$32,823	\$24,823	\$30,823	\$122,000
TOTALS		1,163,430	328,230	248,230	308,230	1,220,000
BENEFIT	Weight Value	Status Quo % Objective	Option II % Objective	Option III % Objective	Option IV % Objective	Option V % Objective
Productivity	4	75%	80%	85%	90%	85%
Effectiveness	5	75%	80%	85%	90%	85%
Opportunity Cost	3	40%	75%	95%	80%	20%
Improved Diversion Rate	2	50%	75%	80%	85%	80%
Management	1	80%	80%	80%	80%	80%
		Status Quo	Option II	Option III	Option IV	Option V
		Benefit Value	Benefit Value	Benefit Value	Benefit Value	Benefit Value
Productivity	4	3.0	3.2	3.4	3.6	3.4
Effectiveness	5	3.8	4.0	4.3	4.5	4.3
Opportunity Cost	3	1.2	2.3	2.9	2.4	0.6
Improved Diversion Rate	2	1.0	1.5	1.6	1.7	1.6
Management	1	0.8	0.8	0.8	0.8	0.8
Total Benefit Points		9.8	11.8	12.9	13.0	10.7
Cost Benefit Ratio		\$119,326	\$27,934	\$19,243	\$23,710	\$114,554

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**APPENDIX D QRP ELIGIBLE AND NON-ELIGIBLE
ITEM LIST**

Table: Items that may or may not be recycled and directly sold under a QRP

Items that <u>May</u> be Recycled and Directly Sold under a QRP	Items that <u>May Not</u> be Recycled and Directly Sold under a QRP ²
Industrial scrap metal from non-Air Force working capital fund (AFWCF) activity	Scrap generated from AFWCF activity routinely used to offset overhead and customer costs
Industrial scrap metal from AFWCF activities (if determined uneconomical for AFWCF to divert/recycle)	Items that must be demilitarized at any time during its life cycle
Expended firing range brass and gleanings - not requiring demilitarization, which have been crushed, shredded, or otherwise destroyed prior to public sale	Items that can be reused for their original purpose without special processing such as:
	- Used Vehicles
Beverage containers (metal, glass, & plastic)	- Vehicle or machine parts
Office paper (High-grade, bond, computer, mixed, telephone books and federal register)	- Electrical components
Newspaper	- Unopened containers of oil, paints, or solvents
Cardboard/Pressboard	- Bottles (not scrap glass)
Glass	Commissary store wastes (Bones, fats, and meat trimmings) and Exchange store wastes
Plastics	Repairable items not processed through the disposal cycle
Scrap wood	Fuels
Rags/Textile wastes	Ships, planes, or weapons that must undergo demilitarization or mutilation prior to sale
Used Oil (except when hazardous waste)	Munitions List items or Strategic List items ³
Batteries (unless prohibited by law)	Hazardous wastes (including household hazardous waste)
Tires	Precious Metal Scrap ^{4,5}
Used cooking oils and food wastes from dining facilities	Radioactive Materials
Wire and Cable (Primary and secondary building wiring)	Ozone Depleting Substances
Non-hazardous Construction and Demolition Items (i.e. scrap metal from appliances, copper piping, etc.)	Government Furnished Material

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**APPENDIX E DEPRECIATION SCHEDULE AND
EQUIPMENT REPLACEMENT
PLANNING**

Table E
QRP Sheppard AFB, Texas
DETERMINING ANNUAL REVENUE SAVINGS REQUIRED FOR EQUIPMENT REPLACEMENT

Description	Initial cost	Depreciable life (in years)	Original Date purchased	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
Shrink Wrap Machine	\$ 2,300	8	01/01/05	\$288	\$288	\$288	\$288	\$288	\$288	\$288	\$288	\$288	\$288	\$288	\$288
Trailer Tilt	\$ 9,597	6	01/01/04	\$1,600	\$1,600	\$1,600	\$1,600	\$1,600	\$1,600	\$1,600	\$1,600	\$1,600	\$1,600	\$1,600	\$1,600
Trailer, Utility 16 ft (white)	\$ 2,499	6	01/01/05	\$417	\$417	\$417	\$417	\$417	\$417	\$417	\$417	\$417	\$417	\$417	\$417
Trailer, Utility 16 ft (green)	\$ 2,499	6	01/01/05	\$417	\$417	\$417	\$417	\$417	\$417	\$417	\$417	\$417	\$417	\$417	\$417
Trailer, Utility 18 ft (charcoal)	\$ 2,499	6	01/01/05	\$417	\$417	\$417	\$417	\$417	\$417	\$417	\$417	\$417	\$417	\$417	\$417
Can Crusher and Conveyor	\$ 6,850	12	01/01/05	\$571	\$571	\$571	\$571	\$571	\$571	\$571	\$571	\$571	\$571	\$571	\$571
Glass Pulverizer	\$ 52,631	12	01/01/05	\$4,386	\$4,386	\$4,386	\$4,386	\$4,386	\$4,386	\$4,386	\$4,386	\$4,386	\$4,386	\$4,386	\$4,386
Recycling Trailer	\$ 35,000	6	01/01/05	\$5,833	\$5,833	\$5,833	\$5,833	\$5,833	\$5,833	\$5,833	\$5,833	\$5,833	\$5,833	\$5,833	\$5,833
Trailer, Car Hauler, 16 ft (blue)	\$ 2,500	6	01/01/06	\$417	\$417	\$417	\$417	\$417	\$417	\$417	\$417	\$417	\$417	\$417	\$417
Baler, Horizontal	\$ 95,166	10	01/01/05	\$9,517	\$9,517	\$9,517	\$9,517	\$9,517	\$9,517	\$9,517	\$9,517	\$9,517	\$9,517	\$9,517	\$9,517
Baler, Vertical	\$ 10,000	10	01/01/00	\$1,000	\$1,000	\$1,000	\$1,000	\$1,000	\$1,000	\$1,000	\$1,000	\$1,000	\$1,000	\$1,000	\$1,000
Skid Steer	\$ 19,363	8	01/01/05	\$2,420	\$2,420	\$2,420	\$2,420	\$2,420	\$2,420	\$2,420	\$2,420	\$2,420	\$2,420	\$2,420	\$2,420
Hopper, self-dumping, 2 cu. yd.	\$ 16,000	8	01/01/05	\$2,000	\$2,000	\$2,000	\$2,000	\$2,000	\$2,000	\$2,000	\$2,000	\$2,000	\$2,000	\$2,000	\$2,000
Hopper, self-dumping, 4 cu. Yd.	\$ 5,200	8	01/01/05	\$650	\$650	\$650	\$650	\$650	\$650	\$650	\$650	\$650	\$650	\$650	\$650
Containers, recycled plastic mesh, green	\$ 13,086	8	01/01/05	\$1,636	\$1,636	\$1,636	\$1,636	\$1,636	\$1,636	\$1,636	\$1,636	\$1,636	\$1,636	\$1,636	\$1,636
Containers, Pro-Mini,	\$ 10,480	8	01/01/00	\$1,310	\$1,310	\$1,310	\$1,310	\$1,310	\$1,310	\$1,310	\$1,310	\$1,310	\$1,310	\$1,310	\$1,310
Antifreeze Recycling Unit	\$ 4,990	12	01/01/00	\$416	\$416	\$416	\$416	\$416	\$416	\$416	\$416	\$416	\$416	\$416	\$416
Electrocoagulation Unit	\$ 25,000	12	01/01/02	\$2,083	\$2,083	\$2,083	\$2,083	\$2,083	\$2,083	\$2,083	\$2,083	\$2,083	\$2,083	\$2,083	\$2,083
Aerosolv Puncturing System	\$ 900	12	01/01/06	\$75	\$75	\$75	\$75	\$75	\$75	\$75	\$75	\$75	\$75	\$75	\$75
Propane Canister Recycling System	\$ 650	12	01/01/00	\$54	\$54	\$54	\$54	\$54	\$54	\$54	\$54	\$54	\$54	\$54	\$54
CD Destroyer	\$ 2,300	10	01/01/03	\$230	\$230	\$230	\$230	\$230	\$230	\$230	\$230	\$230	\$230	\$230	\$230
Oil Filter Crusher	\$ 1,100	12	01/01/06	\$92	\$92	\$92	\$92	\$92	\$92	\$92	\$92	\$92	\$92	\$92	\$92
Decal Machine	\$ 29,500	10	01/01/05	\$2,950	\$2,950	\$2,950	\$2,950	\$2,950	\$2,950	\$2,950	\$2,950	\$2,950	\$2,950	\$2,950	\$2,950
Degausser	\$ 43,561	6	01/01/03	\$7,260	\$7,260	\$7,260	\$7,260	\$7,260	\$7,260	\$7,260	\$7,260	\$7,260	\$7,260	\$7,260	\$7,260
Office Equipment	\$ 17,935	6	01/01/05	\$2,989	\$2,989	\$2,989	\$2,989	\$2,989	\$2,989	\$2,989	\$2,989	\$2,989	\$2,989	\$2,989	\$2,989
Miscellaneous Small Handling Equipment	\$ 19,892	8	01/01/05	\$2,487	\$2,487	\$2,487	\$2,487	\$2,487	\$2,487	\$2,487	\$2,487	\$2,487	\$2,487	\$2,487	\$2,487
TOTAL REVENUE TO BE RESERVED FOR REPLACEMENT PURCHASES ANNUALLY				\$51,512	\$51,512	\$51,512	\$51,512	\$51,512	\$51,512	\$51,512	\$51,512	\$51,512	\$51,512	\$51,512	\$51,512
RUNNING EQUIPMENT REPLACEMENT RESERVE BALANCE				\$0	\$49,012	\$100,524	\$141,556	\$149,506	\$181,421	\$172,501	\$215,872	\$189,244	\$215,755	\$99,040	\$140,072
Description	Initial cost	Depreciable life (in years)	Replacement Years	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
Shrink Wrap Machine	\$ 2,300	8	2013								(\$2,300)				
Trailer Tilt	\$ 9,597	6	2010					(\$9,597)							
Trailer, Utility 16 ft (white)	\$ 2,499	6	2011, 2017						(\$2,499)						(\$2,499)
Trailer, Utility 16 ft (green)	\$ 2,499	6	2011, 2017						(\$2,499)						(\$2,499)
Trailer, Utility 18 ft (charcoal)	\$ 2,499	6	2011, 2017						(\$2,499)						(\$2,499)
Can Crusher and Conveyor	\$ 6,850	12	2017												(\$6,850)
Glass Pulverizer	\$ 52,631	12	2017												(\$52,631)
Recycling Trailer	\$ 35,000	6	2011						(\$35,000)						
Trailer, Car Hauler, 16 ft (blue)	\$ 2,500	6	2006, 2012	(\$2,500)						(\$2,500)					
Baler, Horizontal	\$ 95,166	10	2015										(\$95,166)		
Baler, Vertical	\$ 10,000	10	2010					(\$10,000)							
Skid Steer	\$ 19,363	8	2013								(\$19,363)				
Hopper, self-dumping, 2 cu. yd.	\$ 16,000	8	2013								(\$16,000)				
Hopper, self-dumping, 4 cu. Yd.	\$ 5,200	8	2013								(\$5,200)				
Containers, recycled plastic mesh, green	\$ 13,086	8	2013								(\$13,086)				
Containers, Pro-Mini,	\$ 10,480	8	2008			(\$10,480)								\$ (10,480)	
Antifreeze Recycling Unit	\$ 4,990	12	2012							(\$4,990)					
Electrocoagulation Unit	\$ 25,000	12	2014									(\$25,000)			
Aerosolv Puncturing System	\$ 900	12	2018												
Propane Canister Recycling System	\$ 650	12	2012							(\$650)					
CD Destroyer	\$ 2,300	10	2013								(\$2,300)				
Oil Filter Crusher	\$ 1,100	12	2018												
Decal Machine	\$ 29,500	10	2015										(\$29,500)		
Degausser	\$ 43,561	6	2015				(\$43,561)						(\$43,561)		
Office Equipment	\$ 17,935	6	2011, 2017						(\$17,935)						(\$17,935)
Miscellaneous Small Handling Equipment	\$ 19,892	8	2013								\$ (19,892)				
TOTAL PLANNED EQUIPMENT PURCHASE EXPENDITURES				(\$2,500)	\$0	(\$10,480)	(\$43,561)	(\$19,597)	(\$60,432)	(\$8,140)	(\$78,141)	(\$25,000)	(\$168,227)	(\$10,480)	(\$84,913)

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Table E-1
QRP Sheppard AFB, Texas
Depreciation Schedule - Shrink Wrap Machine
9/30/2006

User input	
Fixed asset	Shrink Wrap Machine
Initial cost	\$2,300
Date placed in service	01/01/05
Number of months owned in first year	12
Number of units	1

End of year	Annual depreciation	Remaining value	Remaining Value Per Unit	Annual Revenues Reserved for Replacement Purchase	Cumulative Reserve
2005	\$288	\$2,013	\$2,013	\$288	\$288
2006	\$288	\$1,725	\$1,725	\$288	\$575
2007	\$288	\$1,438	\$1,438	\$288	\$863
2008	\$288	\$1,150	\$1,150	\$288	\$1,150
2009	\$288	\$863	\$863	\$288	\$1,438
2010	\$288	\$575	\$575	\$288	\$1,725
2011	\$288	\$288	\$288	\$288	\$2,013
2012	\$288	\$0	\$0	\$288	\$2,300
2013	\$0	\$0	\$0	\$0	
TOTAL	\$2,300			\$2,300	

Table E-2
QRP Sheppard AFB, Texas
Depreciation Schedule - Trailer Tilt
9/30/2006

User input	
Fixed asset	Trailer Tilt
Initial cost	\$9,597
Date placed in service	01/01/04
Number of months owned in first year	12
Number of units	7

End of year	Annual depreciation	Remaining value	Remaining Value Per Unit	Annual Revenues Reserved for Replacement Purchase	Cumulative Reserve
2004	\$1,600	\$7,998	\$1,143	\$1,600	\$1,600
2005	\$1,600	\$6,398	\$914	\$1,600	\$3,199
2006	\$1,600	\$4,799	\$686	\$1,600	\$4,799
2007	\$1,600	\$3,199	\$457	\$1,600	\$6,398
2008	\$1,600	\$1,600	\$229	\$1,600	\$7,998
2009	\$1,600	\$0	\$0	\$1,600	\$9,597
2010	\$0	\$0	\$0	\$0	
TOTAL	\$9,597			\$9,597	

Table E-3
QRP Sheppard AFB, Texas
Depreciation Schedule - Trailer, Utility 16 ft (White)
9/30/2006

User input	
Fixed asset	Trailer, Utility 16 ft (White)
Initial cost	\$2,499
Date placed in service	01/01/05
Number of months owned in first year	12
Number of units	1

End of year	Annual depreciation	Remaining value	Remaining Value Per Unit	Annual Revenues Reserved for Replacement Purchase	Cumulative Reserve
2005	\$417	\$2,083	\$2,083	\$417	\$417
2006	\$417	\$1,666	\$1,666	\$417	\$833
2007	\$417	\$1,250	\$1,250	\$417	\$1,250
2008	\$417	\$833	\$833	\$417	\$1,666
2009	\$417	\$417	\$417	\$417	\$2,083
2010	\$417	\$0	\$0	\$417	\$2,499
2011	\$0	\$0	\$0	\$0	
TOTAL	\$2,499			\$2,499	

Table E-4
QRP Sheppard AFB, Texas
Depreciation Schedule - Trailer, Utility 16 ft (Green)
9/30/2006

User input	
Fixed asset	Trailer, Utility 16 ft (Green)
Initial cost	\$2,499
Date placed in service	01/01/05
Number of months owned in first year	12
Number of units	1

End of year	Annual depreciation	Remaining value	Remaining Value Per Unit	Annual Revenues Reserved for Replacement Purchase	Cumulative Reserve
2005	\$417	\$2,083	\$2,083	\$417	\$417
2006	\$417	\$1,666	\$1,666	\$417	\$833
2007	\$417	\$1,250	\$1,250	\$417	\$1,250
2008	\$417	\$833	\$833	\$417	\$1,666
2009	\$417	\$417	\$417	\$417	\$2,083
2010	\$417	\$0	\$0	\$417	\$2,499
2011	\$0	\$0	\$0	\$0	
TOTAL	\$2,499			\$2,499	

Table E-5
QRP Sheppard AFB, Texas
Depreciation Schedule - Trailer, Utility 18 ft (Charcoal)
9/30/2006

User input	
Fixed asset	Trailer, Utility 18 ft (Charcoal)
Initial cost	\$2,499
Date placed in service	01/01/05
Number of months owned in first year	12
Number of units	1

End of year	Annual depreciation	Remaining value	Remaining Value Per Unit	Annual Revenues Reserved for Replacement Purchase	Cumulative Reserve
2005	\$417	\$2,083	\$2,083	\$417	\$417
2006	\$417	\$1,666	\$1,666	\$417	\$833
2007	\$417	\$1,250	\$1,250	\$417	\$1,250
2008	\$417	\$833	\$833	\$417	\$1,666
2009	\$417	\$417	\$417	\$417	\$2,083
2010	\$417	\$0	\$0	\$417	\$2,499
2011	\$0	\$0	\$0	\$0	
TOTAL	\$2,499			\$2,499	

Table E-6
QRP Sheppard AFB, Texas
Depreciation Schedule - Can Crusher and Conveyor
9/30/2006

User input	
Fixed asset	Can Crusher and Conveyor
Initial cost	\$6,850
Date placed in service	01/01/05
Number of months owned in first year	12
Number of units	1

End of year	Annual depreciation	Remaining value	Remaining Value Per Unit	Annual Revenues Reserved for Replacement Purchase	Cumulative Reserve
2005	\$571	\$6,279	\$6,279	\$571	\$571
2006	\$571	\$5,708	\$5,708	\$571	\$1,142
2007	\$571	\$5,138	\$5,138	\$571	\$1,713
2008	\$571	\$4,567	\$4,567	\$571	\$2,283
2009	\$571	\$3,996	\$3,996	\$571	\$2,854
2010	\$571	\$3,425	\$3,425	\$571	\$3,425
2011	\$571	\$2,854	\$2,854	\$571	\$3,996
2012	\$571	\$2,283	\$2,283	\$571	\$4,567
2013	\$571	\$1,713	\$1,713	\$571	\$5,138
2014	\$571	\$1,142	\$1,142	\$571	\$5,708
2015	\$571	\$571	\$571	\$571	\$6,279
2016	\$571	\$0	\$0	\$571	\$6,850
2017	\$0	\$0	\$0	\$0	
TOTAL	\$6,850			\$6,850	

Table E-7
QRP Sheppard AFB, Texas
Depreciation Schedule - Glass Pulverizer
9/30/2006

User input	
Fixed asset	Glass Pulverizer
Initial cost	\$52,631
Date placed in service	01/01/05
Number of months owned in first year	12
Number of units	1

End of year	Annual depreciation	Remaining value	Remaining Value Per Unit	Annual Revenues Reserved for Replacement Purchase	Cumulative Reserve
2005	\$4,386	\$48,245	\$48,245	\$4,386	\$4,386
2006	\$4,386	\$43,859	\$43,859	\$4,386	\$8,772
2007	\$4,386	\$39,473	\$39,473	\$4,386	\$13,158
2008	\$4,386	\$35,087	\$35,087	\$4,386	\$17,544
2009	\$4,386	\$30,701	\$30,701	\$4,386	\$21,930
2010	\$4,386	\$26,316	\$26,316	\$4,386	\$26,316
2011	\$4,386	\$21,930	\$21,930	\$4,386	\$30,701
2012	\$4,386	\$17,544	\$17,544	\$4,386	\$35,087
2013	\$4,386	\$13,158	\$13,158	\$4,386	\$39,473
2014	\$4,386	\$8,772	\$8,772	\$4,386	\$43,859
2015	\$4,386	\$4,386	\$4,386	\$4,386	\$48,245
2016	\$4,386	\$0	\$0	\$4,386	\$52,631
2017	\$0	\$0	\$0	\$0	
TOTAL	\$52,631			\$52,631	

Table E-8
QRP Sheppard AFB, Texas
Depreciation Schedule - Recycling Trailer
9/30/2006

User input	
Fixed asset	Recycling Trailer
Initial cost	\$35,000
Date placed in service	01/01/05
Number of months owned in first year	12
Number of units	1

End of year	Annual depreciation	Remaining value	Remaining Value Per Unit	Annual Revenues Reserved for Replacement Purchase	Cumulative Reserve
2005	\$5,833	\$29,167	\$29,167	\$5,833	\$5,833
2006	\$5,833	\$23,333	\$23,333	\$5,833	\$11,667
2007	\$5,833	\$17,500	\$17,500	\$5,833	\$17,500
2008	\$5,833	\$11,667	\$11,667	\$5,833	\$23,333
2009	\$5,833	\$5,833	\$5,833	\$5,833	\$29,167
2010	\$5,833	\$0	\$0	\$5,833	\$35,000
2011	\$0	\$0	\$0	\$0	
TOTAL	\$35,000			\$35,000	

Table E-9
QRP Sheppard AFB, Texas
Depreciation Schedule - Trailer, Car Hauler
9/30/2006

User input

Fixed asset	Trailer, Car Hauler
Initial cost	\$2,500
Date placed in service	01/01/06
Number of months owned in first year	12
Number of units	1

End of year	Annual depreciation	Remaining value	Remaining Value Per Unit	Annual Revenues Reserved for Replacement Purchase	Cumulative Reserve
2006	\$417	\$2,083	\$2,083	\$417	\$417
2007	\$417	\$1,667	\$1,667	\$417	\$833
2008	\$417	\$1,250	\$1,250	\$417	\$1,250
2009	\$417	\$833	\$833	\$417	\$1,667
2010	\$417	\$417	\$417	\$417	\$2,083
2011	\$417	\$0	\$0	\$417	\$2,500
2012	\$0	\$0	\$0	\$0	
TOTAL	\$2,500			\$2,500	

Table E-10
QRP Sheppard AFB, Texas
Depreciation Schedule - Baler, Horizontal
9/30/2006

User input

Fixed asset	Baler, Horizontal
Initial cost	\$95,166
Date placed in service	01/01/05
Number of months owned in first year	12
Number of units	2

End of year	Annual depreciation	Remaining value	Remaining Value Per Unit	Annual Revenues Reserved for Replacement Purchase	Cumulative Reserve
2005	\$9,517	\$85,649	\$42,825	\$9,517	\$9,517
2006	\$9,517	\$76,133	\$38,066	\$9,517	\$19,033
2007	\$9,517	\$66,616	\$33,308	\$9,517	\$28,550
2008	\$9,517	\$57,100	\$28,550	\$9,517	\$38,066
2009	\$9,517	\$47,583	\$23,791	\$9,517	\$47,583
2010	\$9,517	\$38,066	\$19,033	\$9,517	\$57,100
2011	\$9,517	\$28,550	\$14,275	\$9,517	\$66,616
2012	\$9,517	\$19,033	\$9,517	\$9,517	\$76,133
2013	\$9,517	\$9,517	\$4,758	\$9,517	\$85,649
2014	\$9,517	\$0	\$0	\$9,517	\$95,166
2015	\$0	\$0	\$0	\$0	
TOTAL	\$95,166			\$95,166	

Table E-11
QRP Sheppard AFB, Texas
Depreciation Schedule - Baler, Vertical
9/30/2006

User input

Fixed asset	Baler, Vertical
Initial cost	\$10,000
Date placed in service	01/01/96
Number of months owned in first year	12
Number of units	1

End of year	Annual depreciation	Remaining value	Remaining Value Per Unit	Annual Revenues Reserved for Replacement Purchase	Cumulative Reserve
1996	\$1,000	\$9,000	\$9,000	\$1,000	\$1,000
1997	\$1,000	\$8,000	\$8,000	\$1,000	\$2,000
1998	\$1,000	\$7,000	\$7,000	\$1,000	\$3,000
1999	\$1,000	\$6,000	\$6,000	\$1,000	\$4,000
2000	\$1,000	\$5,000	\$5,000	\$1,000	\$5,000
2001	\$1,000	\$4,000	\$4,000	\$1,000	\$6,000
2002	\$1,000	\$3,000	\$3,000	\$1,000	\$7,000
2003	\$1,000	\$2,000	\$2,000	\$1,000	\$8,000
2004	\$1,000	\$1,000	\$1,000	\$1,000	\$9,000
2005	\$1,000	\$0	\$0	\$1,000	\$10,000
2006	\$0	\$0	\$0	\$0	
TOTAL	\$10,000			\$10,000	

Table E-12
QRP Sheppard AFB, Texas
Depreciation Schedule - Skid Steer
9/30/2006

User input

Fixed asset	Skid Steer
Initial cost	\$19,363
Date placed in service	01/01/05
Number of months owned in first year	12
Number of units	1

End of year	Annual depreciation	Remaining value	Remaining Value Per Unit	Annual Revenues Reserved for Replacement Purchase	Cumulative Reserve
2005	\$2,420	\$16,942	\$16,942	\$2,420	\$2,420
2006	\$2,420	\$14,522	\$14,522	\$2,420	\$4,841
2007	\$2,420	\$12,102	\$12,102	\$2,420	\$7,261
2008	\$2,420	\$9,681	\$9,681	\$2,420	\$9,681
2009	\$2,420	\$7,261	\$7,261	\$2,420	\$12,102
2010	\$2,420	\$4,841	\$4,841	\$2,420	\$14,522
2011	\$2,420	\$2,420	\$2,420	\$2,420	\$16,942
2012	\$2,420	\$0	\$0	\$2,420	\$19,363
2013	\$0	\$0	\$0	\$0	
TOTAL	\$19,363			\$19,363	

Table E-13
QRP Sheppard AFB, Texas
Depreciation Schedule - Hopper, Self Dumping, 2 cu yd
9/30/2006

User input	
Fixed asset	Hopper, Self Dumping, 2 cu yd
Initial cost	\$16,000
Date placed in service	01/01/05
Number of months owned in first year	12
Number of units	16

End of year	Annual depreciation	Remaining value	Remaining Value Per Unit	Annual Revenues Reserved for Replacement Purchase	Cumulative Reserve
2005	\$2,000	\$14,000	\$875	\$2,000	\$2,000
2006	\$2,000	\$12,000	\$750	\$2,000	\$4,000
2007	\$2,000	\$10,000	\$625	\$2,000	\$6,000
2008	\$2,000	\$8,000	\$500	\$2,000	\$8,000
2009	\$2,000	\$6,000	\$375	\$2,000	\$10,000
2010	\$2,000	\$4,000	\$250	\$2,000	\$12,000
2011	\$2,000	\$2,000	\$125	\$2,000	\$14,000
2012	\$2,000	\$0	\$0	\$2,000	\$16,000
2013	\$0	\$0	\$0	\$0	
TOTAL	\$16,000			\$16,000	

Table E-14
QRP Sheppard AFB, Texas
Depreciation Schedule - Hopper, Self Dumping, 4 cu yd
9/30/2006

User input	
Fixed asset	Hopper, Self Dumping, 4 cu yd
Initial cost	\$5,200
Date placed in service	01/01/05
Number of months owned in first year	12
Number of units	4

End of year	Annual depreciation	Remaining value	Remaining Value Per Unit	Annual Revenues Reserved for Replacement Purchase	Cumulative Reserve
2005	\$650	\$4,550	\$1,138	\$650	\$650
2006	\$650	\$3,900	\$975	\$650	\$1,300
2007	\$650	\$3,250	\$813	\$650	\$1,950
2008	\$650	\$2,600	\$650	\$650	\$2,600
2009	\$650	\$1,950	\$488	\$650	\$3,250
2010	\$650	\$1,300	\$325	\$650	\$3,900
2011	\$650	\$650	\$163	\$650	\$4,550
2012	\$650	\$0	\$0	\$650	\$5,200
2013	\$0	\$0	\$0	\$0	
TOTAL	\$5,200			\$5,200	

Table E-15
QRP Sheppard AFB, Texas
Depreciation Schedule - Containers, recycled plastic mesh, green
9/30/2006

User input	
Fixed asset	Containers, recycled plastic mesh, green
Initial cost	\$13,086
Date placed in service	01/01/05
Number of months owned in first year	12
Number of units	18

End of year	Annual depreciation	Remaining value	Remaining Value Per Unit	Annual Revenues Reserved for Replacement Purchase	Cumulative Reserve
2005	\$1,636	\$11,450	\$636	\$1,636	\$1,636
2006	\$1,636	\$9,815	\$545	\$1,636	\$3,272
2007	\$1,636	\$8,179	\$454	\$1,636	\$4,907
2008	\$1,636	\$6,543	\$364	\$1,636	\$6,543
2009	\$1,636	\$4,907	\$273	\$1,636	\$8,179
2010	\$1,636	\$3,272	\$182	\$1,636	\$9,815
2011	\$1,636	\$1,636	\$91	\$1,636	\$11,450
2012	\$1,636	\$0	\$0	\$1,636	\$13,086
2013	\$0	\$0	\$0	\$0	
TOTAL	\$13,086			\$13,086	

Table E-16
QRP Sheppard AFB, Texas
Depreciation Schedule - Container, Pro Mini
9/30/2006

User input	
Fixed asset	Container, Pro Mini
Initial cost	\$10,480
Date placed in service	01/01/95
Number of months owned in first year	12
Number of units	16

End of year	Annual depreciation	Remaining value	Remaining Value Per Unit	Annual Revenues Reserved for Replacement Purchase	Cumulative Reserve
1995	\$1,310	\$9,170	\$573	\$1,310	\$1,310
1996	\$1,310	\$7,860	\$491	\$1,310	\$2,620
1997	\$1,310	\$6,550	\$409	\$1,310	\$3,930
1998	\$1,310	\$5,240	\$328	\$1,310	\$5,240
1999	\$1,310	\$3,930	\$246	\$1,310	\$6,550
2000	\$1,310	\$2,620	\$164	\$1,310	\$7,860
2001	\$1,310	\$1,310	\$82	\$1,310	\$9,170
2002	\$1,310	\$0	\$0	\$1,310	\$10,480
2003	\$0	\$0	\$0	\$0	
TOTAL	\$10,480			\$10,480	

Table E-17
QRP Sheppard AFB, Texas
Depreciation Schedule - Antifreeze Recycling Unit
9/30/2006

User input	
Fixed asset	Antifreeze Recycling Unit
Initial cost	\$4,990
Date placed in service	01/01/00
Number of months owned in first year	12
Number of units	2

End of year	Annual depreciation	Remaining value	Remaining Value Per Unit	Annual Revenues Reserved for Replacement Purchase	Cumulative Reserve
2000	\$416	\$4,574	\$2,287	\$416	\$416
2001	\$416	\$4,158	\$2,079	\$416	\$832
2002	\$416	\$3,743	\$1,871	\$416	\$1,248
2003	\$416	\$3,327	\$1,663	\$416	\$1,663
2004	\$416	\$2,911	\$1,455	\$416	\$2,079
2005	\$416	\$2,495	\$1,248	\$416	\$2,495
2006	\$416	\$2,079	\$1,040	\$416	\$2,911
2007	\$416	\$1,663	\$832	\$416	\$3,327
2008	\$416	\$1,248	\$624	\$416	\$3,743
2009	\$416	\$832	\$416	\$416	\$4,158
2010	\$416	\$416	\$208	\$416	\$4,574
2011	\$416	\$0	\$0	\$416	\$4,990
2012	\$0	\$0	\$0	\$0	
TOTAL	\$4,990			\$4,990	

Table E-18
QRP Sheppard AFB, Texas
Depreciation Schedule - Electrocoagulation Unit
9/30/2006

User input	
Fixed asset	Electrocoagulation Unit
Initial cost	\$25,000
Date placed in service	01/01/02
Number of months owned in first year	12
Number of units	1

End of year	Annual depreciation	Remaining value	Remaining Value Per Unit	Annual Revenues Reserved for Replacement Purchase	Cumulative Reserve
2002	\$2,083	\$22,917	\$22,917	\$2,083	\$2,083
2003	\$2,083	\$20,833	\$20,833	\$2,083	\$4,167
2004	\$2,083	\$18,750	\$18,750	\$2,083	\$6,250
2005	\$2,083	\$16,667	\$16,667	\$2,083	\$8,333
2006	\$2,083	\$14,583	\$14,583	\$2,083	\$10,417
2007	\$2,083	\$12,500	\$12,500	\$2,083	\$12,500
2008	\$2,083	\$10,417	\$10,417	\$2,083	\$14,583
2009	\$2,083	\$8,333	\$8,333	\$2,083	\$16,667
2010	\$2,083	\$6,250	\$6,250	\$2,083	\$18,750
2011	\$2,083	\$4,167	\$4,167	\$2,083	\$20,833
2012	\$2,083	\$2,083	\$2,083	\$2,083	\$22,917
2013	\$2,083	\$0	\$0	\$2,083	\$25,000
2014	\$0	\$0	\$0	\$0	
TOTAL	\$25,000			\$25,000	

Table E-19
QRP Sheppard AFB, Texas
Depreciation Schedule - Aerosolv Puncturing System
9/30/2006

User input						
Fixed asset	Aerosolv Puncturing System					
Initial cost	\$900					
Date placed in service	01/01/06					
Number of months owned in first year	12					
Number of units	1					

End of year	Annual depreciation	Remaining value	Remaining Value Per Unit	Annual Revenues Reserved for Replacement Purchase	Cumulative Reserve
2006	\$75	\$825	\$825	\$75	\$75
2007	\$75	\$750	\$750	\$75	\$150
2008	\$75	\$675	\$675	\$75	\$225
2009	\$75	\$600	\$600	\$75	\$300
2010	\$75	\$525	\$525	\$75	\$375
2011	\$75	\$450	\$450	\$75	\$450
2012	\$75	\$375	\$375	\$75	\$525
2013	\$75	\$300	\$300	\$75	\$600
2014	\$75	\$225	\$225	\$75	\$675
2015	\$75	\$150	\$150	\$75	\$750
2016	\$75	\$75	\$75	\$75	\$825
2017	\$75	\$0	\$0	\$75	\$900
2018	\$0	\$0	\$0	\$0	
TOTAL	\$900			\$900	

Table E-20
QRP Sheppard AFB, Texas
Depreciation Schedule - Propane Canister Recycling System
9/30/2006

User input						
Fixed asset	Propane Canister Recycling System					
Initial cost	\$650					
Date placed in service	01/01/00					
Number of months owned in first year	12					
Number of units	1					

End of year	Annual depreciation	Remaining value	Remaining Value Per Unit	Annual Revenues Reserved for Replacement Purchase	Cumulative Reserve
2000	\$54	\$596	\$596	\$54	\$54
2001	\$54	\$542	\$542	\$54	\$108
2002	\$54	\$488	\$488	\$54	\$163
2003	\$54	\$433	\$433	\$54	\$217
2004	\$54	\$379	\$379	\$54	\$271
2005	\$54	\$325	\$325	\$54	\$325
2006	\$54	\$271	\$271	\$54	\$379
2007	\$54	\$217	\$217	\$54	\$433
2008	\$54	\$163	\$163	\$54	\$488
2009	\$54	\$108	\$108	\$54	\$542
2010	\$54	\$54	\$54	\$54	\$596
2011	\$54	\$0	\$0	\$54	\$650
2012	\$0	\$0	\$0	\$0	
TOTAL	\$650			\$650	

Table E-21
QRP Sheppard AFB, Texas
Depreciation Schedule - CD Destroyer
9/30/2006

User input						
Fixed asset		CD Destroyer				
Initial cost		\$2,300				
Date placed in service		01/01/03				
Number of months owned in first year		12				
Number of units		1				

End of year	Annual depreciation	Remaining value	Remaining Value Per Unit	Annual Revenues Reserved for Replacement Purchase	Cumulative Reserve
2003	\$230	\$2,070	\$2,070	\$230	\$230
2004	\$230	\$1,840	\$1,840	\$230	\$460
2005	\$230	\$1,610	\$1,610	\$230	\$690
2006	\$230	\$1,380	\$1,380	\$230	\$920
2007	\$230	\$1,150	\$1,150	\$230	\$1,150
2008	\$230	\$920	\$920	\$230	\$1,380
2009	\$230	\$690	\$690	\$230	\$1,610
2010	\$230	\$460	\$460	\$230	\$1,840
2011	\$230	\$230	\$230	\$230	\$2,070
2012	\$230	\$0	\$0	\$230	\$2,300
2013	\$0			\$0	
TOTAL	\$2,300			\$2,300	

Table E-22
QRP Sheppard AFB, Texas
Depreciation Schedule - Oil Filter Crusher
9/30/2006

User input						
Fixed asset		Oil Filter Crusher				
Initial cost		\$1,100				
Date placed in service		01/01/06				
Number of months owned in first year		12				
Number of units		1				

End of year	Annual depreciation	Remaining value	Remaining Value Per Unit	Annual Revenues Reserved for Replacement Purchase	Cumulative Reserve
2006	\$92	\$1,008	\$1,008	\$92	\$92
2007	92	917	\$917	\$92	\$183
2008	92	825	\$825	\$92	\$275
2009	92	733	\$733	\$92	\$367
2010	92	642	\$642	\$92	\$458
2011	92	550	\$550	\$92	\$550
2012	92	458	\$458	\$92	\$642
2013	92	367	\$367	\$92	\$733
2014	92	275	\$275	\$92	\$825
2015	92	183	\$183	\$92	\$917
2016	92	92	\$92	\$92	\$1,008
2017	92	0	\$0	\$92	\$1,100
2018	0	0	\$0	\$0	
TOTAL	\$1,100			\$1,100	

Table E-23
QRP Sheppard AFB, Texas
Depreciation Schedule - Decal Machine
9/30/2006

User input						
Fixed asset	Decal Machine					
Initial cost	\$29,500					
Date placed in service	01/01/05					
Number of months owned in first year	12					
Number of units	1					
End of year	Annual depreciation	Remaining value	Remaining Value Per Unit	Annual Revenues Reserved for Replacement Purchase	Cumulative Reserve	
2005	\$2,950	\$26,550	\$26,550	\$2,950	\$2,950	
2006	\$2,950	\$23,600	\$23,600	\$2,950	\$5,900	
2007	\$2,950	\$20,650	\$20,650	\$2,950	\$8,850	
2008	\$2,950	\$17,700	\$17,700	\$2,950	\$11,800	
2009	\$2,950	\$14,750	\$14,750	\$2,950	\$14,750	
2010	\$2,950	\$11,800	\$11,800	\$2,950	\$17,700	
2011	\$2,950	\$8,850	\$8,850	\$2,950	\$20,650	
2012	\$2,950	\$5,900	\$5,900	\$2,950	\$23,600	
2013	\$2,950	\$2,950	\$2,950	\$2,950	\$26,550	
2014	\$2,950	\$0	\$0	\$2,950	\$29,500	
2015	\$0	\$0	\$0	\$0		
TOTAL	\$29,500			\$29,500		

Table E-24
QRP Sheppard AFB, Texas
Depreciation Schedule - Degausser
9/30/2006

User input						
Fixed asset	Degausser					
Initial cost	\$43,561					
Date placed in service	01/01/03					
Number of months owned in first year	12					
Number of units	1					
End of year	Annual depreciation	Remaining value	Remaining Value Per Unit	Annual Revenues Reserved for Replacement Purchase	Cumulative Reserve	
2003	\$7,260	\$36,301	\$36,301	\$7,260	\$7,260	
2004	\$7,260	\$29,041	\$29,041	\$7,260	\$14,520	
2005	\$7,260	\$21,781	\$21,781	\$7,260	\$21,781	
2006	\$7,260	\$14,520	\$14,520	\$7,260	\$29,041	
2007	\$7,260	\$7,260	\$7,260	\$7,260	\$36,301	
2008	\$7,260	\$0	\$0	\$7,260	\$43,561	
2009	\$0	\$0	\$0	\$0		
TOTAL	\$43,561			\$43,561		

Table E-25
QRP Sheppard AFB, Texas
Depreciation Schedule - Office Equipment
9/30/2006

User input

Fixed asset	Office Equipment
Initial cost	\$17,935
Date placed in service	01/01/05
Number of months owned in first year	12
Number of units	1

End of year	Annual depreciation	Remaining value	Remaining Value Per Unit	Annual Revenues Reserved for Replacement Purchase	Cumulative Reserve
2005	\$2,989	\$14,946	\$14,946	\$2,989	\$2,989
2006	\$2,989	\$11,957	\$11,957	\$2,989	\$5,978
2007	\$2,989	\$8,968	\$8,968	\$2,989	\$8,968
2008	\$2,989	\$5,978	\$5,978	\$2,989	\$11,957
2009	\$2,989	\$2,989	\$2,989	\$2,989	\$14,946
2010	\$2,989	\$0	\$0	\$2,989	\$17,935
2011	\$0	\$0	\$0	\$0	
TOTAL	\$17,935			\$17,935	

Note: Includes the following items: air compressor, pressure washer, T.V., Microwave oven, refrigerator, Shop Va, Printer, Tool Kit, Phone system, Weed Eater Blower, Computer, Step Ladder, Shelving, Lockers, Paper Shredder, Evaporative coolers

Table E-26
QRP Sheppard AFB, Texas
Depreciation Schedule - Misc Small Handling Equipment
9/30/2006

User input

Fixed asset	Misc Small Handling Equipment
Initial cost	\$19,892
Date placed in service	01/01/05
Number of months owned in first year	12
Number of units	1

End of year	Annual depreciation	Remaining value	Remaining Value Per Unit	Annual Revenues Reserved for Replacement Purchase	Cumulative Reserve
2005	\$2,487	\$17,406	\$17,406	\$2,487	\$2,487
2006	\$2,487	\$14,919	\$14,919	\$2,487	\$4,973
2007	\$2,487	\$12,433	\$12,433	\$2,487	\$7,460
2008	\$2,487	\$9,946	\$9,946	\$2,487	\$9,946
2009	\$2,487	\$7,460	\$7,460	\$2,487	\$12,433
2010	\$2,487	\$4,973	\$4,973	\$2,487	\$14,919
2011	\$2,487	\$2,487	\$2,487	\$2,487	\$17,406
2012	\$2,487	\$0	\$0	\$2,487	\$19,892
2013	\$0	\$0	\$0	\$0	
TOTAL	\$19,892			\$19,892	

Note: Includes the following items: pallet jack, loading ramp, dolly, floor scales

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82 CES Utility Cost Estimate

UTILITIES ESTIMATE FOR BUILDING:				2140		
<i>Fill in blue cells only</i>						
	<u>ELECTRIC</u>	<u>N. GAS</u>	<u>WATER</u>	<u>SEWAGE</u>	<u>TOTAL</u>	
	<u>YEARLY COST</u>	<u>YEARLY COST</u>	<u>YEARLY COST</u>	<u>YEARLY COST</u>	<u>YEARLY COST</u>	
	\$12,450.73	\$3,744	\$141	\$164	\$16,500	
	<u>ELECTRIC</u>	<u>N. GAS</u>	<u>WATER</u>	<u>SEWAGE</u>	<u>TOTAL</u>	
	<u>MONTHLY COST</u>	<u>MONTHLY COST</u>	<u>MONTHLY COST</u>	<u>MONTHLY COST</u>	<u>MONTHLY COST</u>	
	\$1,038	\$312	\$12	\$14	\$1,375	
EQUATIONS TO PREPARE 8/5 ELECTRIC (KWH) AND NATURAL GAS (KCF) ESTIMATES (5 YEAR AVERAGE)						
	ANNUAL ELECTRIC CONSUMPTION = 12 KWH / SQ FT X BUILDING SQ FT =				136,596	KWH
	ANNUAL NATURAL GAS CONSUMPTION = 0.04 KCF / SQ FT X BUILDING SQ FT =				455	KCF
EQUATIONS TO PREPARE 8/5 WATER (KGAL) AND SEWAGE (KGAL) ESTIMATES (IAW AFI 32-1061)						
	ANNUAL WATER CONSUMPTION = # EMPLOYEES X 50 GAL/DAY X 5 DAY/WK X 52 WK/YR =				91	KGAL
	ANNUAL SEWAGE CONSUMPTION = WATER CONSUMPTION X 70% =				64	KGAL
BUILDING DATA						
		11,383	SQUARE FEET			
		7	NUMBER OF EMPLOYEES			
CURRENT UTILITY RATES AS OF SEPTEMBER 2006 (BASIC UNIT COSTS)						
		\$0.09115	ELECTRIC (\$/KWH)			
		\$8.22314	GAS (\$/KCF)			
		\$1.55287	WATER (\$/KGAL)			
		\$2.57266	SEWAGE (\$/KGAL)			
Samuel E. Hagins / Electrical Engineer / 82 CES/CEOE / 6-5689 / 27 Sep 06						

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**APPENDIX G SAMPLE RECYCLING MONITOR
APPOINTMENT LETTER**



**DEPARTMENT OF THE AIR FORCE
AIR EDUCATION AND TRAINING COMMAND**

MEMORANDUM FOR 82 CES/CEO

FROM: 82 CES/CEO

SUBJECT: Appointment of Qualified Recycling Program (QRP) Monitors

1. In accordance with AFI 32-7080, Pollution Prevention Program, paragraph 3.4, the following personnel have been appointed RRRP Monitors for the (Your Squadron Name and Office Symbol).

Squadron Recycling Monitors

Position	Building	Name	Rank	Office Symbol	Duty Phone
Primary					
Alternate					

Facility Recycling Monitors

Bldg	Name	Rank	Office Symbol	Duty Phone
Primary				
Alternate				

Bldg	Name	Rank	Office Symbol	Duty Phone
Primary				
Alternate				

Bldg	Name	Rank	Office Symbol	Duty Phone
Primary				
Alternate				

Bldg	Name	Rank	Office Symbol	Duty Phone
Primary				
Alternate				

Bldg	Name	Rank	Office Symbol	Duty Phone
Primary				
Alternate				

2. This letter supersedes all previous letters on the same subject.

Your Squadron Commander's signature block here

cc:

Each Individual ([this needs to be on the letter](#))

Office Symbol of Individual's Supervisor

82 CES/CEV ([this needs to be on the letter](#))

[Office Symbol of Squadron Commander](#)

[Office Symbol of Group and Squadron UEC](#)